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OPPORTUNITIES AND CONSTRAINTS IN THE DEVELOPMENT OF FISHERIES ENTERPRISES

Proceedings of a Regional Symposium for CEE/CIS Countries




1–4 September 1998

Natural Resources Institute, Chatham, Kent, UK

DFID

Department for
International
Development



Fisheries sectors of Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) countries have faced difficult times during the process of economic transition to the free market system. This Symposium brought together representatives from Government and the emerging private sector in the region to present their experiences and discuss the issues involved in a number of areas of common interest. The Symposium was organised by the Natural Resources Institute of the University of Greenwich, in collaboration with FAO EASTFISH, from funding provided by the UK Department for International Development.

These Proceedings of a Regional Symposium for CEECIS Countries **Opportunities and Constraints in the Development of Fisheries Enterprises** present over 30 papers that focus on a number of key themes relevant to the development of viable fisheries enterprises. The six sessions cover Finance for Fisheries Enterprises; Business Management Training; Quality Assurance and Hygiene in Relation to International Trade Compliance; Total Quality Management and HACCP; The Marketing of Fish and Fish Products; and New and Added Value Product Development. Also included are the very positive discussions generated by the 53 participants representing 20 countries all but four of which were from the CEECIS region.

The Proceedings will be of particular interest to fisheries managers of emerging developing enterprises and administrators involved in changing the roles and responsibilities of government to support the development of privately owned enterprises. The symposium has brought forward a series of new and challenging problems for enterprise managers and administrators in areas where they had little previous training or experience.

OPPORTUNITIES AND CONSTRAINTS IN THE DEVELOPMENT OF FISHERIES ENTERPRISES

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Natural Resources Institute, Chatham, Kent, UK

Edited by Duncan King and Penny Silverside

Natural Resources Institute, University of Greenwich

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Cover photo: Romanian students participating in a practical session on a course on
'Fresh Fish Preparation, Presentation and Selling' in Bucharest

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FOREWORD

The countries of Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) are all involved in the difficult, and at times painful, process of economic transition as they move into the free market system. In the fisheries sector this has brought forward a series of new and challenging problems for enterprise managers and administrators in areas where they had little previous training or exposure. Our experience, gained in managing a UK government-funded fisheries project in Romania for the past five years plus close collaboration with the Food and Agriculture Organization of the United Nations (FAO) EASTFISH organisation, suggested that many of the problems identified were generic to most countries in the region. The Natural Resources Institute (NRI) and EASTFISH collaborated to organise and present the symposium jointly.

The symposium brought together representatives from Government and the emerging private sector in the region to present their experiences and discuss the issues involved in a number of areas of common interest. The list of problem areas was long and extremely varied. A short list of key subjects was finally selected for the symposium that: could be fitted into the time frame available, were of interest to most of the CEECIS countries and where examples of recent work and experience could be presented and discussed. The papers presented were well received and generated lively comment and discussion. Of equal and possibly more value, were the many informal discussions that took place outside the sessions, often late into the night.

Funding to organise and present the meeting, including sponsorship for the participation of some delegates, was provided by the UK Government's Department for International Development (DFID) from the Advisory Support Services Commission budget.

The success of the symposium reflects the enthusiasm and knowledge of the participants and their willingness to share experiences and discuss new ideas. Particular recognition is due to Ms Claire Troy and her staff in providing the administrative support services that allowed the symposium to go forward so smoothly.

John Rogers
Symposium Convenor
Natural Resources Management Department
Natural Resources Institute

January 1999

EDITORS' PREFACE

Most of the papers in these Proceedings were presented and discussed at the Regional Symposium for CEECIS Countries Opportunities and Constraints in the Development of Fisheries Enterprises which was held at the Natural Resources Institute, University of Greenwich, in Chatham, UK, from 1–4 September 1998. We have however included a few extra papers which were submitted but not presented for lack of time or because the author was unable to attend.

Many of the papers have undergone translation into English and some were translated through a third language. Whilst we have endeavoured to leave the text as similar as possible to the original, there have of necessity been occasions where the text has been edited extensively. We sincerely hope that the essence of the meaning has been maintained with these changes.

Extremely lively discussion took place throughout the meeting; the session on business management training was particularly interesting. Regrettably, however, the recording system failed once or twice and there are therefore a few omissions.

We have wherever possible attempted to use local accents for authors' and delegates' names and apologise for any that may not be correct or for any which we were unaware of; some are not readily available in Word. On other editorial minutiae, acronyms are generally in full on the first mention but some such as EU, USA etc. are in the list but are not defined in the text. Short biographical notes are included for all main authors. Many of the submitted figures were in colour but as the Proceedings are in black and white, only those that would reproduce well and/or added considerably to the clarity of the text have been included. And finally, some of the references may not provide sufficient details and if you have difficulty tracking any we suggest writing directly to the author of the paper concerned.

The views expressed in these proceedings are not necessarily those held by the Symposium organisers, FAO EASTFISH or the editors.

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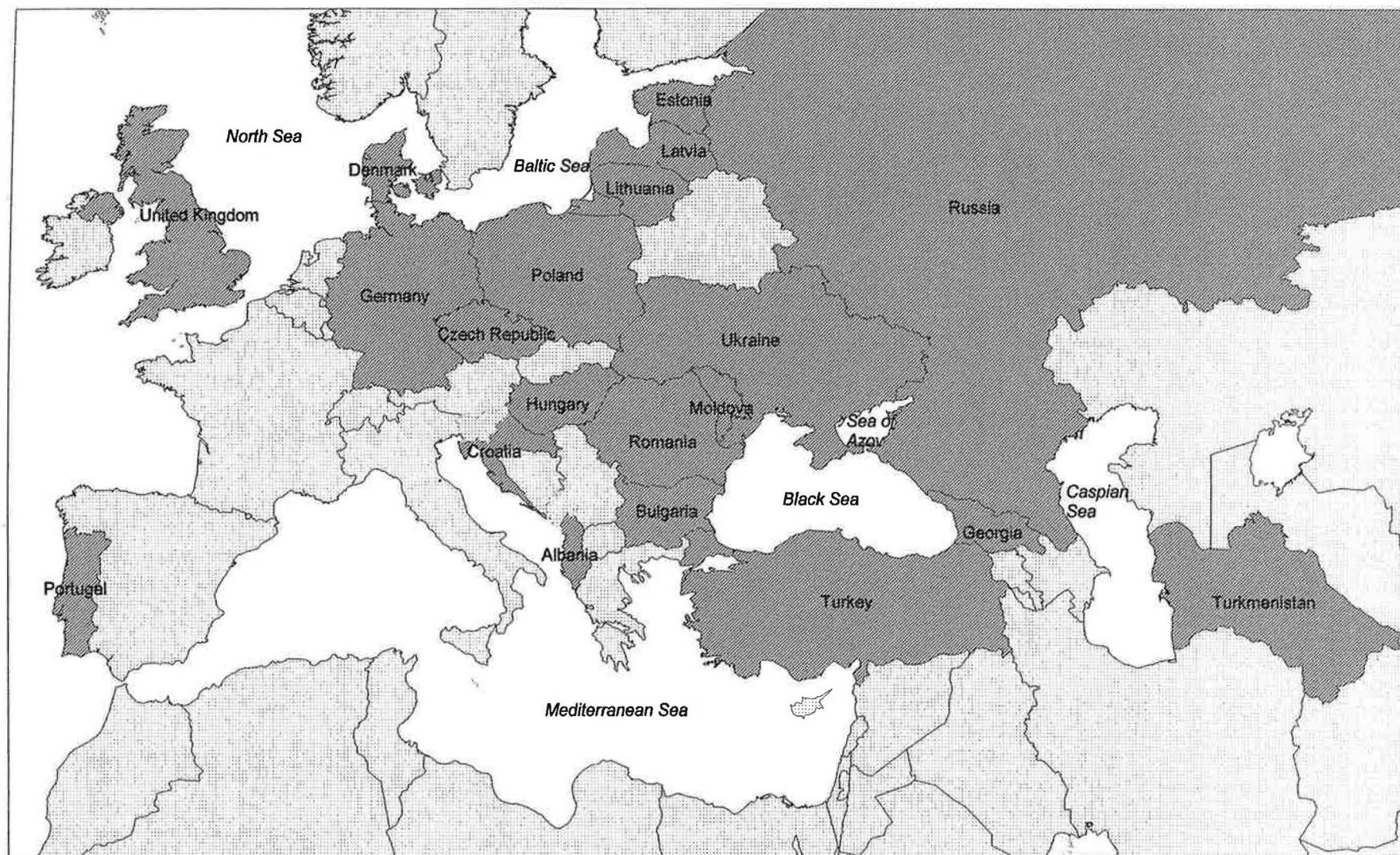
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ACRONYMS AND ABBREVIATIONS

BAA	Bulgarian Agriculture Academy
BAS	Bulgarian Academy of Sciences
BGL	Bulgarian Lev
BROCAD	Fundatia Britano-Romano pentru Cursuri de Afaceri la Distanta (British-Romanian Distance Learning Business Training Foundation)
CCP	critical control point
CEECs	Central and Eastern European countries
CEECIS	Central and Eastern Europe and the Commonwealth of Independent States
CFR	Code of Federal Register
CIS	Commonwealth of Independent States
DANIDA	Danish International Development Agency
DFID	Department for International Development, UK
DM	Deutsche Mark
EAS	European Aquaculture Society
EBRD	European Bank for Reconstruction and Development
EEK	Estonian Kroon
EFTA	European Free Trade Association
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDA	Food and Drug Administration
FDI	foreign direct investment
FOSRI	Food Science and Technology Research Institute, Uganda
FPEI	foreign portfolio equity investment
FRS	Fisheries Research Station, Republic of Moldova
FSO	food safety objective
FVM	Ministry of Agriculture and Rural Development, Hungary
GEF	Global Environment Facility
GMP	good manufacturing practice
GT	gross tonnage
ha	hectare
HACCP	Hazard Analysis Critical Control Point
HAKI	Fish Culture Research Institute, Hungary
HDL-Ch	high density lipid-cholesterol
ICCAT	International Commission for the Conservation of Atlantic Tunas
IMF	International Monetary Fund
IRP	International Review Panel
IRR	internal rate of return
ISO	International Standards Organisation
ITL	Italian Lira
KHF	Know How Fund
kg	kilogram
km	kilometre
LAREX	Romanian Expertise Laboratory
MAF	Ministry of Agriculture and Food, Georgia
MAFAR	Ministry of Agriculture, Forestry and Agrarian Reform, Bulgaria
MEAD	Management Education in Assisting Development
NACMCF	National Advisory Committee for Microbial Criteria in Foods
NAFO	North Atlantic Fisheries Organisation

NARO	National Agricultural Research Organisation, Uganda
NATO	North Atlantic Treaty Organisation
NGO	non-governmental organisation
NPV	net present value
NRI	Natural Resources Institute
NRMD	Natural Resources Management Department, NRI
NSI	National Statistics Institute, Bulgaria
OMFB	National Committee for Technological Development, Hungary
PHARE	Poland, Hungary Assistance for Reconstructing the Economy
PRP	pre-requisite programmes
QA	quality assurance
QC	quality control
QMP	Quality Management Programme
QMS	Quality Management Systems
R&D	research and development
ROL	Romanian Leu
SFI	Sea Fisheries Institute, Poland
SFIA	Sea Fish Industry Authority (Seafish), UK
SME	small and medium enterprises
SOF	State Ownership Fund, Romania
SMART	Specific, Measurable, Achievable and Realistic, Time-oriented and controlled targets
SSOP	Standard Sanitary Operating Procedures
SWOT	Strengths, Weaknesses, Opportunities and Threats
t	tonnes
TA	technical assistance
TAC	total allowable catch
TACIS	Technical Assistance for the Commonwealth of Independent States
TCP	Technical Co-operation Project
TNA	training needs analysis
TQM	Total Quality Management
TRASECA	Transportation corridor Europe–the Caucasus–Asia
TTU	Tallinn Technical University, Estonia
UAAS	Ukrainian Academy of Agrarian Sciences
UN	United Nations
UNDP	United Nations Development Programme
UoH	University of Humberside, UK
USA	United States of America
USD	United States Dollar
WHO	World Health Organisation



Map showing countries represented at the Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) Regional Fisheries Symposium, September 1998.

Opening Address

Distinguished visitors, Ladies and Gentlemen, it is my privilege and pleasure to welcome you to the University of Greenwich, Natural Resources Institute (NRI) for this Regional Fisheries Symposium, the first of its kind, I believe. I will tell you a little about your host institution, particularly since we are an Institute **in transition** and our history has some relevance to this meeting.

These fine buildings were once the property of the Royal Navy, and reflect the government origins of NRI. We began more than 100 years ago as a state body charged with research and development in natural resources targeted at overseas countries. We were civil servants with a rigid hierarchical system, a clear and fixed rulebook and clear instructions as to what we were to do. We were comforted by the fact that the State paid our salaries and costs and protected us from the commercial world. We worked, and still work, in all aspects of natural resource management, including fisheries, forestry, livestock, agriculture and wildlife, and an integrated approach is always adopted in the disciplines of social science, economics, integrated pest management, environmental monitoring and assessment and food security for these sectors.

NRI MISSION STATEMENT

Improving the Management of Natural Resources in Support of
Sustainable Livelihoods

However, in 1996 the Government privatised NRI and sold it to the university sector. Since then we have been, as I said, in transition. As with the focus of this meeting, the fisheries sector in a free market economy, NRI has to learn many lessons.

We have no core funds, we must generate our own income in a highly competitive market place. We must offer value for money and a high-quality product otherwise nobody will buy our training, research or consultancy services. If we make a mistake we must pay for it, nobody else will. We must promote and market our products and competitiveness. The problem is, of course, that we are all civil servants, born and bred. We have no training in free market enterprise, and we are having to learn as we go — a painful and sometimes costly experience.

For this reason, I am particularly happy, on behalf of our Director, to welcome you to NRI for your discussions on the operation of fisheries enterprises in a free market economy; we may learn from you and, maybe, some of our recent experiences have relevance to your objectives this week.

So what we have learned? Despite the changes, we have some 300 staff all committed to this objective; we have a turnover of some £21 million and make some 35% of our income from research, 60% from consultancy and the rest from training. In achieving this we have learned:

- The customer is always right. As a state organisation we were in a sense our own customer. There was little incentive to provide a product that met the exact needs of the end-user.
- The market place is a hard world and you must be competitive to survive. We started out with a rigid pricing structure that did not permit flexibility to address what the market would bear.
- A culture change is necessary. Civil servants do not automatically make entrepreneurs, they need to be trained.
- To flourish and grow you must have a comparative advantage. We had a rare mix of applied research and consultancy, with a very wide range of subject expertise, but our approach was mainly sectoral not multidisciplinary.
- To be profitable you must curb your overheads. We had a large staff base and a very expensive site. It could not be supported under a commercial regime. We shared the site and slimmed from 500 to 300 members of staff.

I think you will agree that many of these issues are highly relevant to your own discussions over the next three days.

This meeting is, and has been, very much a collaborative venture. It arose from NRI work with colleagues in Romania, where we have worked since 1992, but has grown through the participation of FAO EASTFISH and many other colleagues from a wide range of countries in Eastern Europe.

Behind the title, the meeting addresses fundamental issues in natural resources management — the efficiency and effectiveness of the fisheries sector over an enormous proportion of the world's surface. This has significance far beyond the pure commercial and economic issues to be addressed this week. It is an accepted fact that there is little, if any, scope for increase in capture fisheries production. Many wild stocks are under severe pressure from exploitation. It is equally well accepted that demand for fisheries products will rise steeply with increasing population, particularly in developing countries.

The solution to filling the gap between supply and demand has often been seen as aquaculture. Yet this has its own problems. Competition for land and water resources, and for feedstuffs, and the environmental impact of intensive farming, raise questions over sustainability of a greatly enlarged global aquaculture industry.

Against this background, the importance of an efficient, economically sound and sustainable fisheries sector cannot be over-emphasised. The opportunities for profitability in Eastern Europe are, I am sure, substantial. Hopefully the private sector will take these opportunities in partnership with a public sector committed to the sustainable use of the resources upon which the sector depends for its long-term survival.

I wish you an enjoyable and valuable meeting, and I look forward to the results of your labours on Thursday.

Prof. Barry Blake
Head, Natural Resources Management Department
Natural Resources Institute

SESSION 1

Finance for Fisheries Enterprises

Chair: John Ryder
Rapporteur: Ian Watson

Constraints and Opportunities in Financing Private Enterprise

Bent Larsen¹, EASTFISH, Denmark

ABSTRACT

Notable changes have taken place in the Central and Eastern European countries (CEECs) since the end of the 1980s. The move from central planning of the economy to a more market-oriented approach has followed different courses/paths in the development of their fisheries sector. Some common characteristics, however, are the dismantling of the distant-water fleet, attempts at privatising the former state-owned collective fisheries companies, and the abolition of a government-led distribution system. Typically, small and medium-sized enterprises are struggling to survive in a market-driven competitive environment against obstacles, such as outdated production systems, shortage of raw materials, incomplete land reform programmes and policies that are not always supportive of enterprise development. In this sphere, international co-operation and joint ownership of production facilities and marketing systems provide good opportunities to reach a market of 380 million consumers who are used to having fish as part of their daily diet.

RECENT TRENDS IN FISHERIES SECTOR DEVELOPMENT

Major changes have taken place in the fishery sector of Central and Eastern European countries (CEECs) since initiation of the transition from a centrally planned economy towards market-driven economies.

An important aspect is the virtual scrapping of the distant-water fleets of the coastal nations. At one time the brave fishermen exploited the marine resources from the Arctic to Antarctic seas. A consequence of the reduced fleets is that the production of raw material has decreased drastically across the region. A drop in total landings from approximately 11 million tonnes in 1990 to barely 6 million tonnes in 1996 has been experienced. More recent statistics indicate that the landings are increasing, but at a slow pace. The

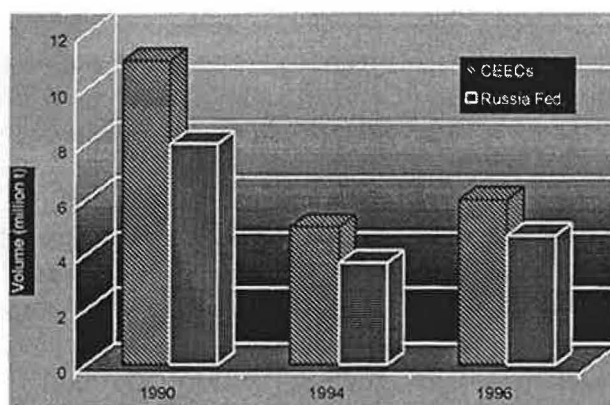


Figure 1: Total landings in CEECs and Russian Federation, 1990, '94 and '96

¹ Bent Larsen works with EASTFISH in Copenhagen as the Financial and Investment Advisor. He has 17 years' experience working as a consultant within the area of business development in countries undergoing the process of economic transformation. During his career within large Danish international consulting companies he has held corporate positions as Head of Department and has been appointed as a member of the Board of Directors of two companies. Bent holds MA degrees in Political Science and Economy, History and Communications as well as a BBA of International Business Finance. His extensive experience within the fishery sector has involved work in most CEECs, Asia, Africa and Latin America.

decreasing availability is not only in terms of volume landed but also in terms of the variety of species available.

Perhaps equally important is the fairly poor infrastructure available at the ports of landing. Though it is noted that substantial differences exist between the countries, the landings are generally handled manually, with only limited amounts of flake ice being applied. Auction systems are virtually unknown, and cold-storage facilities in the port areas are limited in availability, capacity and efficiency. The entire distribution system from point of entry to the end-consumer suffers from insufficient access to cold-chain facilities. One consequence is that fresh fish products are limited in availability and quality.

Aquaculture production traditionally played a less important role in terms of volume, and focused on carp species. In most cases these are consumed seasonally with only a few value-added products having been developed. Today, large areas of the pond schemes established earlier lie idle and production volume is down. A further limitation in the re-establishment of aquaculture development is the lack of sufficient brood-stock, fertilised eggs and fish feed. The local production of fishmeal and feed has always been low as carp need only limited volumes of expensive composite feeds. Unfortunately the fleet reduction and the aquaculture downturn have led to an under-supply to the fish processing industry. In consequence an important part of the sector's workforce has been made redundant.

FISH TRADE

With decreasing availability of raw material from their own sources, the CEECs have emerged to become net importers of raw material and final products. The volume of trade measured as imports and export together has increased from 0.7 million tonnes (1992) to 2.5 million tonnes in 1996. A change in the direction and pattern of trade is seen as well. Today the Baltic Countries and Ukraine are the main raw material importers and processors of mainly canned products. Final products are then re-exported to Russia, Belorussia and the Central Asian republics. The external and inter-regional trade has a value of more than USD 3 billion, Russia being the major player with a trade value of more than USD 2.1 billion.

As a way of measuring the market size of the region, the availability of fish products for human consumption is used. Although the availability is down from 6.2 million tonnes in 1992 (see Table 1) to 4.8 million tonnes (1996), the overall trend indicates an increase of the average consumption per capita (which in the 1980s was at a level of 22 kg/person/year, and now is around 7 kg). Thus the 380 million consumers of the region have resumed their traditional preference for fish products, which in earlier times were considered nutritious and inexpensive parts of the daily diet.

MAJOR CONSTRAINTS

It has already been mentioned that insufficient supply of raw material of the right quality is a problem in the food supply and also in the economic aspects of sector development. Inadequate distribution systems in combination with typically old-fashioned processing facilities contribute further to the poor quality of the output products. This again limits the options for exporting from the region.

Table 1: Availability of fish and fish products in CEEC Region, 1992–96 (in '000 tonnes)

SOURCE	1992	1993	1994	1995	1996
Marine landings	6138	4847	4059	4795	5151
Inland capture	321	253	244	244	265
Aquaculture	199	202	160	134	120
Imports	105	258	651	789	891
Exports	-577	-1385	-1767	-1632	-1639
Total availability	6186	4175	3347	4394	4788

During recent years a number of requests for assistance to improve, modernise and/or expand the processing and aquaculture capacity have been received by EASTFISH. Typically these are in the form of project proposals from individual industry owners/operators, but government authorities also submit project ideas/proposals to be handled by EASTFISH. Obviously such proposals vary considerably in nature, scope and quality. Generally they are fairly short and do not contain adequate information, structured in a way that will attract the attention of much-needed foreign partners or donors from the international aid community. Thus fairly poor skills in project preparatory work is an obstacle as well.

Perhaps the key to a gradual revoking of the potentials of the fisheries sector rests with the ability to access sources of financing. As with any activity related to the private sector development, a well-functioning banking system is a prerogative. Within this area, the region in general — with a few notable exceptions, such as Estonia, Czech Republic, Hungary and Poland — suffers from finance sectors that are inadequately supplied with funds and lacks western-style portfolio management practices. Bankers are reluctant to provide capital unless it is guaranteed — up to 200% collateral is provided by the applicant — and, furthermore, supplied with a detailed feasibility study or business plan. The latter is required particularly if international credit lines through local intermediary banks are accessed. This situation is further aggravated by the traditional reluctance of entrepreneurs to approach banks for supplementary financing as they may seek prohibitive interest rates and, in certain cases, also a share of the profit and a seat on the Board of Directors. Thus limited portfolio capital in terms of loans and difficult administrative procedures constitute an important constraint to development.

THE OPPORTUNITIES

Despite the obstacles, which taken at face value may seem somewhat overwhelming, the opportunities are abundant. The main argument in favour of investment into the fisheries sector of the CEECs is the market of 380 million people who used to consume an average of 22 kg of fish products per person. A complementary argument is related to the relative price levels, where fish products are lower priced than meat, especially, red meat. The areas of interest, looking only at private sector investment, are:

- Fleet restructuring
- Landing and distribution
- Value-added products
- Aquaculture production.

Fleet restructuring

Resource management has been introduced in some of the region's countries. In fact, today the TAC (total allowable catch) of many fisheries is not fully exploited, thus leading to the negotiation of fishery licence agreements with third nations. A substantial part of the accessible raw material resource does not therefore result in value-added production within the CEECs. Hence there is a need for upgrading the remaining part of the fleet. This would involve modernisation of existing vessels in terms of improved energy-efficient engines and the introduction of fishing gear and technologies. There is also a need to introduce new fisheries, e.g. for flat fish.

Landing and distribution

Improvement is needed at the fishing port level, particularly, the infrastructure, such as quays, berthing facilities, shipyards and workshops for repair and maintenance. Also cold store plants, auction halls and modern off-loading facilities are needed for industrial fisheries.

Across the country facilities for cold-chain distribution are needed, such as transport, in-country cold stores, and specialised fish markets. Finally, there is a genuine need for more market outlets to the end-consumers. This would involve equipping supermarkets with adequate facilities for the marketing of fresh fish. Other retail outlets designed to handle fresh fish and other fish products are also needed.

Value-added products

Investment opportunities related to value-added products encompass two types, namely traditional products and more sophisticated or upmarket products, which have little exposure in the CEEC markets.

- **Traditional products** (intra-regional market). This group includes products that are widely marketed and are to some extent seasonal. Commonly found examples are salted and smoked products, especially, smoked mackerel which has a growing potential — the preferred species is the North Atlantic mackerel due to its fat content. Canned products have substantial market shares in most countries. Most common are probably the Riga sprat and other canned products based on local species of sprat, anchovy, and herring. More recently products based on Atlantic mackerel and herring species have gained market shares as have Pacific sardine (pilchard) and horse mackerel.
- **Upmarket products** (for intra-regional and external trade). During recent years a new type of market has emerged: the consumers belong to middle- and high-income levels — including the *nouveaux riches*. This group has a preference for products of a more western style where price is not an important consideration, which include (in order of importance):
 - breaded and battered products such as fish fingers and other ready-to-eat products (species: hake, whiting, pollack)
 - *surimi*-based goods such as crab sticks and fish burgers
 - retail packs which need final preparation in the oven or microwave.

Aquaculture (including marine aquaculture)

Opportunities in aquaculture are related to the re-establishment and improvement of traditional production systems and introduction of new types of aquaculture and species.

- **Improvement of traditional production.** It is important to re-establish and improve carp farming as there is an existing and well-established market for the products although, in most countries, this still has a marked seasonality in the consumption pattern. A similar opportunity exists for trout farming, but this is limited to countries where the freshwater sources are abundant and exploitation is allowed.

Modernisation and expansion of sea bass and sea bream production in the coastal zones of the Mediterranean member countries is also a possibility. Due consideration though has to be given to the interaction with the environment and the tourism sectors.

- **Introduction of new species.** A demand both in the CEECs and in certain western European countries exist for species such as pike, pike perch, crayfish and mussels.

THE WAY FORWARD

The farming technology is known in some member countries, but transfer of know-how and technology is needed, especially as regards the culture of crayfish and mussels. Environmental awareness is growing in the member countries and it is generally noted that investment should be carried out in accordance with valid EU legislation.

Access to Finance – Constraints Faced by the Romanian Fisheries Sector

Krishan George¹, Know How Fund Fisheries Project, Romania

ABSTRACT

Since 1989 there has been clear evidence of a decline in fishery sector activities in Romania with the implication that the sector is under-performing in terms of potential contribution to the economic development of the country. Privatisation is considered necessary together with a fundamental restructuring at the company level, and an adequate influx of investment. Of the 80 plus financial institutions approached by the project, not one was enthusiastic about investment in the fisheries sector. The reasons for this ranged from the abundance of more 'attractive' alternatives to the complete lack of knowledge of the sector. Lending institutions should be informed of the realistic potential in fishing enterprise activities. Furthermore, the companies themselves must show real changes to operational and administrative procedures and be able to provide adequate security for loan/credit extensions.

INTRODUCTION

Since 1989 there has been clear evidence of a decline in fishery sector activities, in relation to state-owned fishing companies, as shown by the decline in dividends to the shareholders, reduction in the quantity of fish produced, and evidence of the closure of some units. Broadly, this declining trend implies that the fisheries sector is under-performing in terms of potential contribution to the economic development of the country.

Privatisation is considered necessary to obtain the separation of political and economic decisions — this is where there is scope for gains in increasing the economic efficiency of a firm by a comprehensive set of incentives and constraints. Poor-quality capital stock, low levels of technology, obsolete working practices and high levels of staffing may suggest that there is scope to increase efficiency from current levels, which were a legacy of the previous economic order. Privatisation should also serve the creation of a market structure that is compatible with the expectation of an emerging democratic society.

Unreliability (shortages and poor distribution) of production inputs may have contributed to many firms producing as many of their own production inputs as possible. This is evident in the current lack of a service or sub-contracting sector. It should be noted that the flexibility found in the service and sub-contracting sectors is an advantage when adapting to economic change.

A change in ownership alone will not necessarily improve efficiency: firms must face competitive pressures in markets where there are rational prices and hard budgets. Therefore, transforming the performance of a state-owned enterprise relies to a large

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extent on both the micro-economic environment within the enterprise and the macro-economic environment in which they operate.

Investment is the fundamental key to change — financial investment as well as investment in time and knowledge. This paper deals only with the issues of financial investment. There is a real requirement for credit in the Romanian fisheries sector.

The majority of the 46 fishing companies are wholly owned by the State with official valuations ranging from USD 150 000 to USD 5 000 000. A few of these companies were included in the mass privatisation scheme of 1995/96 and are now partially owned by private mutual funds.

ACCESSING FINANCE

During the first quarter of 1998, the Know How Fund (KHF) Fisheries Project contacted 82 financial institutions in Romania, with the objective of accessing finance for enterprises in the fishing sector. These ranged from commercial banks, Romanian and foreign, to development funds operating in Romania. The KHF received six responses, and of these none was particularly enthusiastic about financing investments in the fisheries sector.

Criteria and terms for loan/credit lines vary greatly, and the following provides a broad summary. Many institutions extend hard currency credits only to Romanian companies that export the majority of their products, receiving hard currency for these exports: some offer both ROL (Romanian Leu) and hard currency credit lines. The formula used is typical of most markets where an amount of money is made available to a company and this can be fully or partially drawn down upon. Interest is charged on the money that is used and a monthly maintenance fee is charged on the balance.

- Applications for the ROL/USD loan or credit line require the following information from the applicant:
 - official balance sheet for the previous 2–3 years
 - budget for the period for which the loan/credit line is required
 - cash-flow estimates for the period for which the loan/credit line is required
 - production and distribution contracts to indicate that the product is really being produced and sold.
- Terms of loan/credit:
 - period must be negotiated with the particular facility
 - amount available ranges from USD 150 000 to USD 5 000 000
 - collateral required in the form of property or letter of credit (usually a minimum of 50% of the loan/credit must be covered but the actual percentage is subject to negotiation)
 - interest rates on loan/credit range between 45% and 60% for ROL and may adjust daily — fixed interest rate for hard currency loan/credit where available
 - fixed interest is charged on loan/credit not utilised and annual rates range between 5% and 10%, calculated on a monthly basis
 - there is normally a management fee for the loan/credit amount utilised and annual rates range between 2% and 6%, calculated on a monthly basis
 - commitment fee ranges between 2% and 5% of total loan/credit
 - an analysis fee is normally charged and this ranges between ROL 100 000 and ROL 500 000.

It should be noted that some facilities will negotiate loans in exchange for some equity position (in most cases not a majority position). However this depends to a large extent on the sector within which the applicant is operating.

There is also a loan/lease purchase scheme organised by the State Ownership Fund (SOF) which allows a successful applicant to structure a loan on the basis of a 20% down payment of the negotiated value. The term and interest repayments are negotiated directly. To date there is no evidence that a fisheries enterprise has had access to such funding.

CONSTRAINTS TO ACCESSING FINANCE

Institutions' perspective

From the perspective of the institutions involved there are a number of issues that influence loan/credit applications from fisheries sector enterprises. In general the financial institutions are looking for an element of security in the transactions that they commit to. This is reflected in the type of information that the applicant is required to submit. In an environment such as Romania, this implies a shorter loan/credit period, knowledge of the business activity, track record of applicant and sector, and liquidity in property or product offered as security.

- **Loan/credit period.** Generally the financial institutions will be more willing to extend a loan/credit to a business that is able to make repayments relatively quickly. Given the current stocking density and growth cycles of the farmed species, Romanian fishing enterprises will require a minimum of two years before loan/credit repayments can be initiated.
- **Knowledge of business activity track record.** In most cases lending will be biased towards sectors which are better understood or of higher profile. In some cases lending is also biased towards applicants or sector of business activity that have had a successful track record.
 - The Romanian fisheries enterprises attract low political priority and are little understood by the financial institutions.
 - Negative publicity is often associated with fisheries enterprises which in the past have been related to the depletion of fish stocks by pelicans and cormorants.
 - Many loan/credit applicants from the fisheries sector do not have successful track records, nor do they have prior experience in other business sectors and therefore often find it hard to access finance.
- **Liquidity of assets offered as security.** The more liquid the asset, the more likely that it will be accepted as collateral. Fisheries enterprises are often in remote areas where there are few alternative uses for land or buildings. Furthermore the products involved are highly perishable once harvested and therefore are unlikely to be considered as suitable security.

Fishing enterprises' perspective

From the perspective of the fishing enterprises there are a number of issues that influence an applicant's access to finance.

- **Overvaluation of assets.** In most cases the official valuation of assets is considerably higher than the market value. The implication here is that the return generated from the enterprise under existing operations is unlikely to pay for the investment. In some cases the fishing basins associated with a farm are only suitable for extensive fish production. It is unlikely that a loan/credit will be extended to an applicant if the revenue generated from extensive fish production clearly cannot service it.
- **Ownership.** Many finance institutions are unwilling to deal with fishing enterprises given the current ownership protocols. Under the current ownership, all dividends from the fishing enterprises must be repaid to the shareholder on an annual basis. The implications of this are:
 - If dividends are repaid annually, any cash reserves generated in one year cannot be utilised in the next. Money must be borrowed during the first quarter to cover operational costs until revenues can be generated by the enterprise.
 - A major factor contributing to the harvesting strategy adopted by a farm is a need to generate as much cash as possible early in the year in order to pay for production inputs which will secure harvests in the following year.
 - Repayment of dividends to the state suppresses any incentive to produce any more than the quantitative target set at the beginning of the year. Managers and workers are paid fixed salaries and receive no part of dividends.
 - The fisheries sector is characterised by a lack of reinvestment in the companies. A result of this is the gradual deterioration of existing assets. This has an effect on the overall functionality and efficiency of the enterprise activities.
- **Unrecorded transactions.** In some cases a number of transactions are unrecorded and do not appear on the official books of a company. Under these conditions the true business potential of a fishing enterprise is not recorded.

All these issues will influence the information submitted to a financial institution as a part of the loan/credit application.

OPTIONS FOR SECURING FINANCE

The dissemination of information about fisheries activities is an important way of making financial institutions aware of the business potential in the fisheries sector.

- Information about successful fishing enterprises should be promoted to provide a positive image about business in the sector.
- Activities such as fish processing and distribution should be highlighted to stress the value-added potential in the sector and allow comparisons with other food processing and distribution sectors that are more familiar to financial institutions.
- Applications should be made to financial institutions that have been set up to promote investment in rural areas. At the same time, these financial institutions which have special mandates should be briefed on fisheries enterprise activities and the potential growth opportunities therein.

The KHF Fisheries Project has played an important role in raising the profile of the Romanian fisheries sector through the publication of an industry magazine, inter-ministerial working groups, and individual interviews with the management of financial

institutions. The adoption of more effective and efficient operational and administrative procedures will allow for longer-term business stability.

The issue of overvaluation of assets remains a point of discussion, however it should be noted that the procedures for negotiation on final value allow for some flexibility.

Securing investment from a local individual or business seems to be the most likely way forward in terms of accessing finance for the purchase of assets. Access to finance is likely to be easier for a number of reasons:

- The investor may already have adequate contacts with a financial institution.
- The investor may have a proven track record and the required documentation for the loan application presented in a suitable way.
- The collateral offered by an investor with interests in other sectors may also be an advantage in accessing finance.
- The general business knowledge and track record in successful business may be an advantage and help to lower the perceived risk associated with an unfamiliar sector.

CONCLUSIONS

Lending institutions should be informed of the realistic potential in fishing enterprise activities, however they must be provided with adequate security for loan/credit extensions. Dissemination of information regarding fishing enterprise activities as well as promoting investors from other sectors to participate in fisheries activities is an option for improving access of fishing enterprises to loan/credits in Romania.

Setting Up a Private Fisheries Company in Romania

Gheorghe Stefan¹, Steel '94 SRL, Romania

ABSTRACT

This personal account of the creation of a private fisheries company in Romania, Steel '94, shows that with hard work and enterprise the business can succeed and expand. The initial investment in setting up the company is presented. The number of shops has increased, together with the development of a viable trade supplying supermarkets with pre-packed frozen fish products. Although the business mainly uses locally produced freshwater fish, frozen and canned fish are imported from northern Europe and South America. The sequence of how the business developed and the rationale behind its development are described. The plans for the future are also outlined.

INTRODUCTION

I finally resigned from government service in 1994 after becoming dissatisfied with the lack of change in the fisheries sector, and because of the declining situation in the market and the impossibility of making any changes. The previous distribution system through large state-owned retail chains (Alimentara SA) had broken up and retailing of fish was very difficult. Many of the old shops were leased to private individuals and were converted to sell other commodities that rarely included fish. Consumers wanted fish, especially fresh fish, but could not find it.

I felt there was a large potential to buy directly from the producers, especially with cash, and sell through my own retail shop. Steel '94 was registered in April 1994 and began trading in August of that year. The experience of the last three years has been one of very hard work and expansion of the business.

THE INVESTMENT

The initial investment was very small:

- The equivalent of USD 50 to register the company.
- A 10-year lease was negotiated for a small shop with cold storage and display cabinets (previously it had been the storage and changing rooms for a restaurant). The rental was payable at the end of the first year, because there was no other interest in the premises. Utility charges were paid monthly.
- An insulated truck was rented for the purchase of fish during visits to the Danube Delta and/or fish farms. Fish was purchased with seven days' credit for cash payment. Three staff were employed.

Any surplus income from selling fish, after meeting all necessary costs, was put back into the business to finance expansion. Subsequent investment included:

¹ Gheorghe Stefan is a graduate fisheries specialist from Romania. He has worked as a fisheries engineer and farm manager and, in 1985, he became the State Fisheries Society General Manager. He resigned from Government in 1994 to start his own fish company (Steel '94 SRL) with one small retail shop in Bucharest.

- A shop was rented in my hometown, Tirgoviste, 80 km from Bucharest, that had 150 000 citizens but no fish shop. Again a 10-year lease, with the possibility of outright purchase and payable at the end of the year, was negotiated. Second-hand display and storage equipment was rented from a state company. A second-hand 3-tonne insulated truck was purchased for USD 6000 in September 1994, using income from the previous six weeks' trading.
- In February 1995 a 40-m² kiosk was constructed in Cringasi Market, near my headquarters, for USD 5000. In April the Tirgoviste shop was purchased outright for USD 5500. In July a shop was rented in a main Bucharest market (USD 200 per month paid monthly in arrears). USD 10 000 was invested to convert and equip the shop with new storage and display cabinets. In August a second-hand Dacia 1-tonne pick-up, with an insulated body, was purchased for USD 3500. In October refrigeration equipment at the headquarters was refurbished for USD 3000.
- USD 10 000 was invested early in 1996 to upgrade the headquarters processing and retail facilities to bring them close to EU hygiene standards.
- In August 1997 a 10-year lease was negotiated on a 1000-ha lake, 20 km from Bucharest at USD 12 000 per year, paid twice yearly in arrears. A further USD 25 000 was invested in boats, fishing equipment and a building at the lake. In December a 50-year lease on the land for the Tirgoviste shop was purchased for USD 7000 per year, paid annually in arrears.
- In May 1998 USD 25 000 was invested in imported, second-hand processing equipment (refrigerated container, vacuum packing machine, band saw, etc.).

For all these investments no credit from the banks, or other sources was used. Loans were not available in Romania because of my poor collateral and interest rates were up to 100% per year. The business has averaged a turnover of around USD 900 000 for each of the first three years.

DEVELOPMENT OF THE BUSINESS

- The business began with selling fresh, whole fish through one shop; small quantities of canned, marinated and cured fish were also sold and some private traders were supplied with fish. Two additional shops were then opened.
- The most readily available fresh fish, Chinese silver carp, was difficult to sell as it was not popular with consumers. Trials to develop new acceptable products² from this fish were carried out, e.g. fillets, steaks, heads and frames (and roe). The trials showed that there was a strong demand for all parts of the silver carp and this was rapidly developed as a major part of the business.
- As locally produced canned fish was in short supply, of poor quality and expensive, one container of canned mackerel was imported directly from Chile in 1995. Customer demand was strong. An order for four containers of canned fish from Chile, with extended credit from the supplier, is expected to arrive on 1 September 1998 in Romania.

² The development of these added value products is reported in Session 6 of this Symposium.

- Some frozen marine fish was purchased from Romanian importers. In 1996 direct imports of frozen fish were begun — hake fillet from Peru and salmon, mackerel, herring, cod, etc. from Norway.
- The added value fresh products from silver carp and other species were developed by vacuum packing and freezing fillets and steaks. This was initially to provide a buffer stock for my own shops so that the product was available if fresh deliveries failed.
- Fresh salmon was imported by air from Norway for a period beginning in 1997. This has now stopped because the consumers cannot tell the difference between fresh and frozen, and frozen is much cheaper for me to buy.
- In 1997 marketing of the vacuum-packed products was extended to access the emerging supermarkets in Bucharest. This has developed into a major activity, currently worth USD 22 000 per month.
- The business currently employs 40 people full-time.

RATIONALE FOR DEVELOPING STEEL '94

Making money was an obvious intention in setting up the business. Being able to create the business with a very small initial investment was essential, because of the problems of obtaining credit in Romania. My feeling that demand did exist has been justified but it has been essential to provide a regular supply of good quality fish at acceptable prices. Expanding the range of products and buffer stocks of frozen fish has been important in keeping regular customers. The intention is that every shop will have a range of fish at the start of every working day. Good service and an attractive presentation have been shown to be important in attracting and keeping customers. The lake was rented to provide guaranteed access for fresh fish if other supplies failed.

As a fisheries specialist I wanted to use my professional training and prove that, as a private businessman, I could be more successful than as a state employee. I am responsible for all the decisions in the business and do not have to seek approval from anybody. I do take advice from others when considering any new activities or investments but the decision is, ultimately, mine.

THE FUTURE

There was almost no competition at first but this is now changing as other companies come into the market. It will be necessary to develop the range of products, improve efficiency and maintain high standards of customer service to keep ahead of the competition. This was one of the reasons for importing processing equipment.

The existing processing facilities restrict the ability of the business to expand further. Business plans have been prepared for a new much larger processing complex to supply the company shops, the supermarket chains and other private traders. To do this properly will require a substantial investment (around USD 500 000). There are also possibilities to open new, modern fully equipped shops in the centre of Bucharest but this will be another substantial investment.

Maintaining the name and reputation of the company in the future is important to keep our place in the market. Training employees to give good service to the customers and working to high standards for processing and hygiene are also important.

Because of the reputation that has been established in the last three years, with regular and substantial foreign exchange transfers, the Bank is now interested to provide credit. This is a complete reversal of their attitude two years ago. It may now be possible to attract credit for a major expansion of the company in the future.

The Fisheries Sector in Bulgaria, 1997–98

Nikolay Kissiov¹, State Fisheries Inspectorate, Bulgaria

ABSTRACT

According to Bulgarian legislation (Fisheries Act, 1982) freshwater fish farming and exploitation of fish resources, including the Black Sea and Danube River Fisheries, is under the authority of the Ministry of Agriculture, Forestry and Agrarian Reform (MAFAR). The State Fisheries Inspectorate (SFI) of MAFAR is responsible for the fisheries sector and the commercial fisheries activities in the country, including freshwater fish farming and the Danube River and Black Sea fishing activities. During the report period the political and economic situation in Bulgaria has changed and it is now more stable, which has allowed some important activities in the fisheries sector to be completed.

CURRENT ECONOMIC SITUATION

The Monetary/Currency Board has been in force since 1 June 1997 and the Bulgarian currency (Bulgarian Lev/BGL) has been fixed to the German Mark (DM) at the rate of DM 1 to BGL 1000 (USD 1 = BGL 1780 at 1 June 1998). The rate of inflation has now stabilised and for the second half of 1997 it has been about 15–20% monthly (on average) instead of 115–120% in the previous period. The bank rate interest has also stabilised to about 5% — it was more than 150% at the end of 1996 and beginning of 1997. The minimum salary now is about USD 30 — it was USD 3–4 at the beginning of 1997; the average monthly salary is about USD 100 and is increasing.

General changes in the legislation system of the country are expected and will cover economic (in general) reform, privatisation, investments (national and foreign), administrative reform in the State, and structural reform in the whole industry, agriculture, tourist industry etc.

CHANGES AND DEVELOPMENTS

A seminar 'The Development of the Fish and Aquaculture Industry/Sector' was organised at the end of March 1998 by the State Fisheries Inspectorate (SFI), Sofia, and Hull International Fisheries Institute, UK, with the financial support of the British Council in Sofia. There were representatives from FAO, EASTFISH, Denmark, and from the MinAgry of Romania, the Danube Delta Institute, Tulcea, Romania, and private companies from Norway and USA. More than 130 participants presented the state and private fish sector in the country including freshwater fish farming, Black Sea fishing, fish trade, fish research institutes, Ministry of Environment and Waters, and the National Statistics Institute. The final seminar of the FAO/TCP (Technical Co-operation Project) 'Rehabilitation of Inland Aquaculture' also took place. The assistance and support of FAO and EASTFISH have been very useful, have enabled these meetings to take place and have created a positive image of the Bulgarian fisheries sector.

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The Bulgarian Fisheries and Aquaculture Association, Sofia, an organisation/union of fish producers (mainly freshwater fishery sector and fish trade) was established during the above-mentioned seminar and is now seeking official registration. The Bulgarian Fishing Association, Burgas, was established and registered in February 1998 mainly for marine fishery activities.

The Minister established the Fisheries and Aquaculture Department within MAFAR from 1 May 1998 and SFI is now responsible for its functions and activities. This is a key reform in the fisheries sector and is a result of the new institutional building policy of the Government and MAFAR. Now the new structure has to be organised and become a force.

The disintegration of the fishery sector (the Black Sea enterprises are under the umbrella of the Ministry of Industry) should be stopped and the food industry, including all fisheries activities, should be within the structure of one ministry — MAFAR. This would lead to improved organisation and management of the activities within the sector and the EASTFISH Project; it would also allow us to try to rehabilitate the national information and statistics system. The assistance of FAO, EASTFISH, Poland, Hungary Assistance for Reconstructing the Economy (PHARE) Programme, British Know How Fund (KHF), United Nations Development Programme (UNDP) and other international organisations will be very useful.

Annual per capita fish consumption is likely to increase from 2.0 kg in 1993–94 to 4.0–5.0 kg in 1999: in the mid-1980s it was about 7.0 kg/person/year. The export of fish from Bulgaria decreased from 24 000 tonnes in 1996 to 11 000 tonnes in 1997; imports increased five- to six-fold from 2800 tonnes to 16 000 tonnes.

The ocean fleet has been fully destroyed over the last six years and Ocean Fisheries Ltd. in Burgas is under liquidisation and privatisation. Most of the marine fish species are imported, mainly from Russia, EU countries, Norway and Greece.

Privatisation in the country is progressing well. Around 50% of the freshwater fish farms and Black Sea fishing enterprises are already privatised and rehabilitation of the sector and stabilisation of production are likely to increase. Total production of freshwater fish in the mid-1980s reached 15 000–16 000 tonnes per year, of which 11 000 tonnes came from the state companies, including dam/lake catches; the remaining 4000–5000 tonnes were from the co-operative sector. Currently this has been reduced for all freshwater fish, and in 1994–96 production was about 2500 tonnes. The expected production of freshwater fish from the fish farms (including dam/lake catches and the Danube) for 1998 is about 4500 tonnes and for the year 2001 it is about 9000 tonnes. The production of the Black Sea fishery decreased from 20 000 tonnes in the mid-1980s to 5000–6000 tonnes in 1996, including invertebrates (mussels and *Rapana* spp.).

LEGISLATION

Some changes (in the chapter of penalties) in the Bulgarian Fisheries Act (1982) were amended by Parliament in January 1998. The new Fisheries Law and legislation in general, harmonised with the EU, is under preparation. We need the help, support and assistance of FAO, EASTFISH and the EU in this very important work. We urgently need some examples of fisheries and aquaculture laws and acts of more developed countries like Denmark, UK and Belgium and our neighbouring countries such as Greece. We also need samples of documents of national and international (within the EU)

unions/associations (NGOs) of fish producers to gain their experience in organising and structuring such organisations.

The draft of a new Fisheries and Aquaculture Act is being prepared with the support of EU experts (Dr William Howarth from the University of Kent, Canterbury, and Mr Tore Gustavsson from Sweden Fisheries Board). The draft should be ready by the end of 1998. The National Product Classification/Nomenclature, prepared by the National Statistics Institute (NSI) and SFI, has been amended and has been in force since 1 January 1998.

The draft of the new Convention for Fisheries and Conservation of the living resources in the Black Sea has already been prepared by the coastal countries. The final version is being prepared and this has to be finalised before it can be signed by the official representatives of the States. All the Black Sea countries are to arrange a preliminary diplomatic meeting to discuss the text and it is hoped that the representatives and consultants of the FAO Legal Department and FAO EASTFISH, as well as some EU Departments, will attend as their experience and assistance would be very useful. The new Convention will replace the existing Black Sea Fisheries Agreement between the former USSR, Bulgaria and Romania (1957) and should regulate all marine fisheries activities of the coastal countries — Bulgaria, Georgia, Romania, Russia, Turkey and Ukraine.

It is necessary to activate the existing Danube River Fisheries Agreement (1957) and the Fisheries Commission — the last meeting was in 1991 — and to prepare a new Convention on Fisheries and Conservation of the Fish Resources of the Danube River with the participation of all Danube countries, including Germany and Austria. The assistance of FAO, EASTFISH and the PHARE Programme will be useful in the initial preparatory work.

The licensing system for commercial fishing in the Black Sea and the Danube River has been amended for three years. The licences are issued by SFI to the individual fishermen working with different fishing gears, including fishing vessels in the Black Sea. The number of issued licences has increased from 3648 in 1995 to 3832 in 1996 and 4186 in 1997. This year the system has also covered fishery activities in the inland waters — dam/lakes and all artificial reservoirs. The money collected from these licences is included in the budget of SFI and is used to cover some of their expenses for fishery control, for the creation of a sustainable genetic fund and stocking the inland waters, and to cover Bulgarian fees in international fisheries organisations and conventions — North Atlantic Fisheries Organisation (NAFO), Antarctic, Black Sea, Danube River and, in the future, EASTFISH.

RESEARCH

The first privately owned sturgeon farm with a hatchery was established last year (1997) and is now operational; it is owned by Esetra Commers Ltd in Boliartsy, in the Plovdiv region. The first spawning of sturgeon and beluga was successfully completed this spring. There is now a stock of fingerlings for restocking the Danube River with these important species. In the middle of August the Danube was restocked with 1500 fingerlings of sturgeons (1000 common sturgeon, *Acipenser gueldenstaedti*, of about 100 g each; 300 fingerlings of sterlet, *Acipenser ruthenus*; and 200 fingerlings of beluga, *Huso huso*, of about 20 g each). This work, and other activities in growing sturgeon, was financed by SFI. Experiments growing sturgeons in net cages in the dam/lake

'Ovtcaritza' are in preparation; it will be a joint venture between two private companies, Esetra Commers Ltd. and OMIKOM Ltd., Nontcho Vodenitcharov, supported by SFI.

For the first time this year the State has assisted by providing BGL 90 million (ECU 45 000) to rehabilitate the genetic fund of fish in the country. An extra BGL 100 million will come from SFI (income from the licences). This money will be used to import brood-stock, fingerlings, larvae and eggs of common carp, Chinese carp (silver carp, bighead carp, mud carp (black amur), grass carp (white amur)), sturgeon, silver trout, rainbow trout, lake salmon and other species.

The responsibility for research institutes engaged in the field of fisheries and aquaculture lies with the Bulgarian Agriculture Academy (BAA) and the Bulgarian Academy of Sciences (BAS). These are:

- Institute of Fish Resources – 9000, Varna, 4, Primorski Blvd., Tel/Fax: +359 52 257876 (Director: Prof Dr Peter Kolarov)
- Institute of Freshwater Fisheries – 4004, Plovdiv, 248, Levski Str., Tel/Fax: +359 32 556033 (Director: Dr Groziu Grozev)
- Institute of Zoology – Bulgarian Academy of Sciences, 1000, Sofia, 1, Ruski Blvd., Tel: +359 2 9885151 (Director: Prof Dr Naidenov).

Some of the universities and their specialised sections and laboratories are also involved in research work on fisheries and aquaculture as well as their basic work in teaching students, for example:

- Sofia University, Faculty of Biology, Section of Hydrobiology and Ichthyology
- Thracian University, Stara Sagora, Department/Section/Laboratory of Freshwater Fish Farming
- Burgas Free University, Agricultural Faculty, Mariculture Specialisation/Section.

FURTHER SUPPORT REQUIRED FOR THE FISHERIES SECTOR

Further support required for management of fish resources and aquaculture in the water ecosystems in Bulgaria should involve:

- Establishment of a system of fish commodity exchanges and wholesale markets
- Enhancement of a system for providing scientific services on fisheries and aquaculture and establishment of a network of consulting focal points, based on existing units of the fisheries and aquaculture research institutes, universities, faculties, sections and laboratories, the SFI, and professional fisheries/aquaculture associations
- Establishment of a comprehensive information and statistical system of the fisheries and aquaculture sector with the capacity for linking through the Internet with systems in European countries, FAO, EASTFISH etc.
- Enhancement of the system for monitoring and control on the utilisation, conservation and prohibition of the fish resources
- Stabilisation of the controlling authorities of SFI and strengthening its material basis — transport vehicles, vessels, computer system and drags
- Improvement of management of the fisheries and aquaculture sector at the national level

- Technology and projects (specialised farms/stations) for artificial breeding of sturgeon, Black Sea turbot, grey mullet and other species for restocking the Danube River and the Black Sea; and for artificial breeding of other freshwater fish species and aquatic animals (carp-type, herbivores, local types of trout, lake salmon, crustaceans etc.) for the creation of a sustainable genetic fund for stocking inland waters (rivers, lakes, dam/lakes and reservoirs)
- Methodological and technical assistance for the National Fisheries Association/s (Union of Fish Producers), including office equipment (fax and copy machines, PCs, e-mail, Internet etc.).

CONCLUSIONS

The Bulgarian fisheries and aquaculture sector needs support to renovate and rehabilitate its production capacities, in order to assist the private sector with investment projects, research activities, the marketing system, and fisheries information and statistics system. Such work could be implemented through the main project with finance through the PHARE Programme, FAO, World Bank, British KHF, UNDP, Global Environment Facility (GEF) and other international and national (e.g. Japan, Germany) organisations and foundations/funds. The assistance of the FAO EASTFISH project could be also very important, as well as other projects through the EU, North Atlantic Treaty Organisation (NATO) etc. The project could be entitled: 'Management of Fish Resources and Aquaculture in the Water Ecosystems'.

Problems and Perspectives to Improve Profitability of Pond Fish Production in Hungary

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ABSTRACT

Pond fish production has a long tradition in Hungary, and the vast majority of fish production comes from ponds. In 1997, 14 510 tonnes of fish was produced from 18 947 ha, the total effective fish pond area in Hungary. Pond fish production has always been a profitable activity in Hungary; it is based on the efficient use of natural resources by the application of special fish pond technologies. The profitability of pond fish production has been the highest of all other animal productions during the transitional period into a market economy. In general the rate of return on operational costs is between 15% and 25%, however, the rate of return on investment is only 2–5% in pond fish farms. This paper discusses the economy of pond fish production in Hungary, and outlines the main problems, the R&D needs, and the recent action taken to increase profitability of production.

POND FISH PRODUCTION IN HUNGARY

The first pond fish farms were built in the 1890s according to German and Bohemian standards for the production of common carp. The total fish pond area was about 9200 ha in 1938. As a result of a massive fish pond construction programme after the Second World War, the total area reached 22 000 ha by 1975 (Váradi, 1996). Fish ponds were built in those regions where soil conditions were rather limited for efficient agriculture production (e.g. sodic soils), and where water supply was readily available. Under the typical continental climate in Hungary it takes three years to grow the fish up to table size (1–1.5 kg). Pond fish production is based on common carp dominated polyculture, intensive manuring, and supplementary feeding with cereals. The yield can reach 1400–2000 kg/ha/year in well-managed pond fish farms (Pintér, 1997).

In 1997, the total effective fish pond area in Hungary of 18 947 ha yielded 14 510 tonnes of fish (HOSZ, 1998). Total fish production from 1990–97, and the species composition of production in 1997 are shown in Figure 1 and 2. The main reasons for the declining fish

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production since 1990 are: the considerable changes in ownership due to the political and economical changes in Hungary in the early 1990s (Figure 3); the serious water shortage over a four-year period; the decreased inputs as a response to the increasing prices; and the loss of eastern markets. However, privatisation is now complete and new owners are making efforts to increase production, reconstruct old ponds and improve their marketing. The positive results of these efforts show a slight increase of production since 1996 (Figure 1).

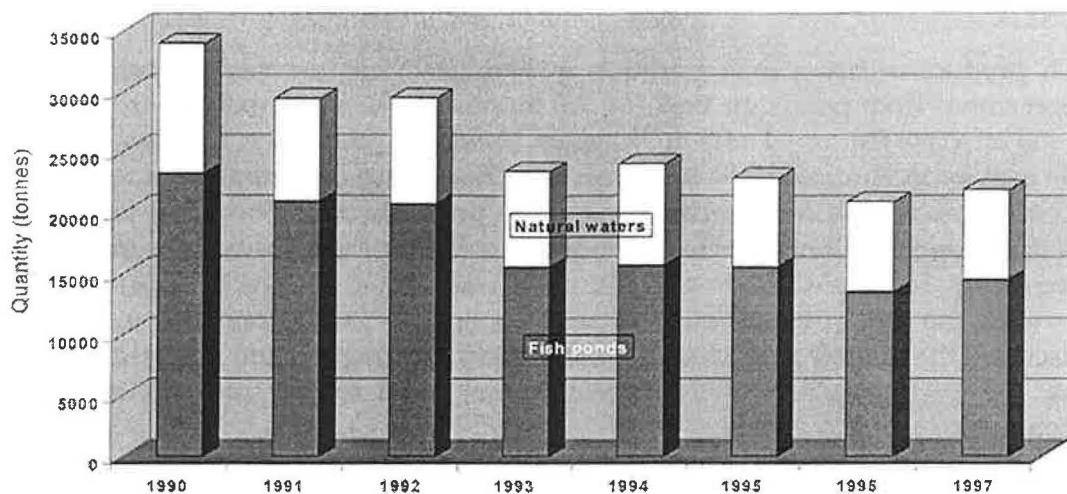


Figure 1: Total fish production in Hungary, 1990–97

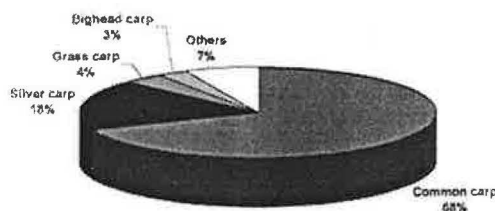


Figure 2: Species composition of pond fish production in Hungary, 1997

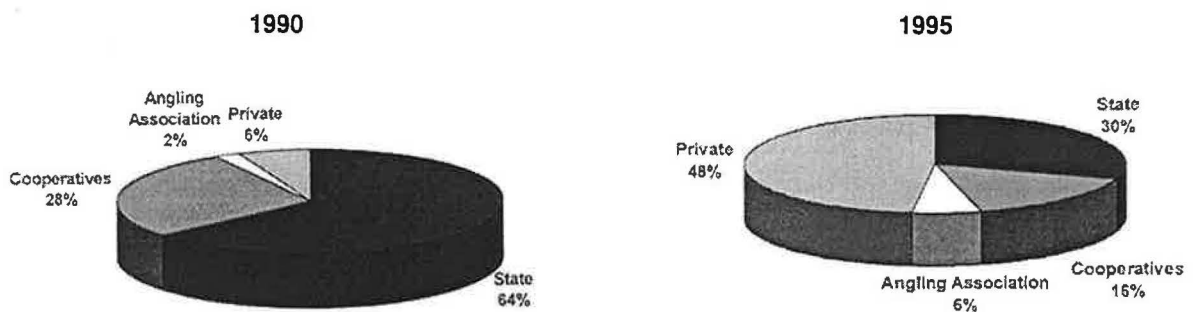


Figure 3: Changes in pond ownership during privatisation, 1990 and 1995

ECONOMY OF POND FISH PRODUCTION

Production costs

Although fish pond technologies show great variety, the general cost structure of production is summarised in Table 1.

Table 1: Cost structure of pond fish production (after Szűcs, 1997)

Cost items	%
Material	55–65
Feed	25–30
Stocking material	50–55
Water	10
Manure, fertiliser	5
Others	5–10
Salaries	15–20
Services	5–10
Maintenance and depreciation	5–6
Other costs	2–4
Overheads	10–15

- **Material costs:** Similarly to other animal production sectors, the material costs represent the highest element of the production costs in pond fish production.
 - **Feed:** The use of formulated feed is not common in pond fish culture in Hungary; it is applied only in some intensive ponds, but the combination of natural feed supply, grain feeding and pellet feeding is also applied at some farms where the intensity level is higher. The most important supplementary feeds are cereal grains like wheat, maize and barley, which are sometimes produced by the fish farm itself to decrease production costs.
 - **Stocking material:** The highest input is the stocking material, which may reach 55% of the total production cost. In order to keep this item low, many fish farms are trying to produce their own stocking material even if the quality is sometimes lower. As the importance of quality in aquaculture is increasing, it is expected that more and more farms will buy high quality fish seed from licensed fish hatcheries.
 - **Water:** There is an increasing competition for water in Hungary and this cost represents a relatively high proportion of the production cost. The water-supplying companies sell water at a price which is determined by market conditions. The cost per hectare may vary between USD 150 and USD 300 annually. Water users should also pay a tax-like fee for the availability of water resources; this varies according to the conditions at the site but is around USD 2–8/ha/year. Recently, farmers have been trying to save water by circulating it within the farm, and research programmes have also been carried out to develop water-efficient fish production systems.
 - **Manure and fertilisers:** These are basic materials to enhance the natural food in fish ponds; 4–5 tonnes of manure or 0.2–0.3 t/ha fertiliser are applied in one hectare of a grow-out pond, however the dose is changing considerably

according to the local conditions and applied technology. Although 50–70% of the fish production comes from manure and fertilisers, their share in the total production cost is only 5–8%. Therefore, appropriate manuring and fertilisation technology has a basic importance in the management of pond fish farms.

- **Salary:** The size of the salary component has been decreased at many pond fish farms which have been privatised and family labour is used. Co-operatives and state farms also try to minimise the use of labour due to the high taxes; hired labour during peak seasons like harvesting is typical at pond fish farms. In spite of previous efforts and good results in the mechanisation of various fish farming procedures (feeding, fertilisation, harvesting etc.), the existing pond fish farms have a rather low level of mechanisation due to the lack of money for technical development. Even if some money is available, it is used for the reconstruction of earth works.
- **Service cost:** This cost mainly involves the transportation costs of fish, manure and feed. Most of the farms have their own facilities to transport materials within the farm, however only a few are equipped with modern trucks with live-fish transporting facilities for long-distance transport. These farms also provide services to other fish farms.
- **Maintenance and depreciation costs:** The actual maintenance and depreciation costs are rather low in Hungarian fish farms, since the maintenance and reconstruction works have been neglected in recent years. The new owners used their money to buy the farm and the most important facilities, and to start the operation. Unfortunately about 70% of the total fish pond area needs major reconstruction. The Ministry of Agriculture and Rural Development has a special fund for agricultural investment and reconstruction. Fish farms can also apply for a subsidy, which covers 27% of the total investment cost. Using this fund, a 235 ha new pond will be built and a 1638 ha pond will be reconstructed in 1998. However, considerably more effort is needed to reach an adequate level of technical conditions in pond fish farms.
- **Overhead costs:** These show great variety from farm to farm. Overhead costs have not even been monitored in some small enterprises, while it still remains high in some state farms and larger enterprises.

Profitability

Pond fish production has always been a profitable activity in Hungary; it is based on the efficient use of natural resources by the application of special fish pond technologies. The profitability of pond fish production has been the highest of all animal production systems during the transitional period to a market economy.

The total annual production cost in a pond fish farm, which produces all age groups of fish, is USD 1200–1500/ha, 1996 prices (Szúcs, 1997). The profit varies between USD 170/ha and USD 450/ha in such complex farms, although it may be higher in fingerling production farms. In general the rate of return on operational cost is 15–25%, however the rate of return on investment is only 2–5% in pond fish farms.

Since fish prices are determined by the market, and producers have only limited possibilities to influence prices, the main tool to increase the profit of pond fish farmers is to increase revenue with no or minimal increase in the production costs. A better quality product will result in improved marketability and higher prices.

As far as the domestic market is concerned, fish does not play an important role in the diet, and annual fish consumption is only around 3 kg/person. The demand for fish, however, is very high during certain holidays especially before Christmas. The price of carp reached a peak of about USD 4/kg during the last Christmas period when the gap between wholesale and retail prices reached 63%. There have been efforts to increase the consumption of fish by promoting it as a healthy food, however, the development of processing techniques and the improvement of marketing require further efforts. The value of the total fish export was about USD 5.5 million in 1997: 90% of this came from the export of live common carp, mostly to Belgium, Germany and Italy. The export of common carp dropped by 32% compared to last year: there has been no export subsidy for fish and processed fish export since the beginning of 1997.

In pond fish farms efficient use of manure could contribute significantly to the increase in yield without major increase in the costs. The application of manure for the enhancement of natural productivity of the fish ponds has a long tradition in Hungary. However manuring has not always been carried out properly and it is not based on continuous monitoring of the nutrient status of the ponds. There are also some limited possibilities to decrease the production costs in pond fish farms through the application of a stocking structure which best suits the given conditions, through more efficient feeding, and by decreasing farm overheads.

PROBLEMS AND PERSPECTIVES TO IMPROVE PROFITABILITY

Based on the findings of Szúcs (1997), the major problems in pond fish production, which have been rooted in the past, are summarised in the following:

- poor conditions of fish ponds and related facilities due to the lack of maintenance and reconstruction works in the past decades
- difficult access to credit for fish farming
- high interest rates on bank loans
- the ownership of fish ponds and the arable lands for producing cereals for fish feeding have been often separated during privatisation
- lack of integration between producers, processors, and traders
- increasing competition on the export markets (Czech Republic, Poland, Croatia, Slovakia, France)
- input prices are increased to a higher rate than that of farm-gate price of fish
- the potential in local markets has not been exploited
- poor management mechanism and incentive system in some state-owned fish farms
- inadequate protection of properties and high rate of poaching
- environmental concerns due to the increased awareness of the value of natural resources
- bird predation (0.4–0.6 kg fish/cormorant/day)
- water supply problems (high cost, water quality, drought period, lack of compensation for the improvement of water quality in some fish ponds)
- poor management skills and the improper application of technology at some farms.

As a consequence of the considerable structural changes in Hungarian agriculture in the past years, there have also been difficulties in the fish production sector. However, despite the problems described above, there are positive tendencies and future prospects are promising for the pond fish production sector. First of all, privatisation has been

completed, the situation for most pond fish farms has stabilised and there are signs of gradual increase of production, improvement of technology level and technical upgrading of ponds and facilities. The long tradition in pond fish production and the entrepreneurial spirit of the farmers have also been important elements of recovery from the difficulties of the transition period into market economy. The legal and institutional framework of fish production has also been developed recently in Hungary and provides a good basis for further development of pond fish production.

The National Federation of Fish Producers plays an active role in safeguarding the interests of fish producers. The Federation has 32 members and operates about 13 000 ha fish ponds. The Fish Product Council and the newly established Carp Breeding Branch have also been affiliated to the Federation. The Fish Product Council suggests price limits, contingents and export-ban periods, co-ordinates marketing activities between producers, processors and traders, and provides information to members. The agricultural subsidy system is also available for providing grants and incentives for agricultural investments, reconstruction works, for the protection of gene reserves and for several other activities related to the modernisation of agriculture, including pond fish culture.

Although no efficient fish culture extension system is available in Hungary, joint efforts have been made by the Fish Culture Research Institute (HAKI), the Federation of Fish Producers and the Scientific Council for Fisheries to assist farmers through short courses, professional forums and written information. During a recent nationwide fisheries forum, the following research and development needs have been identified (Horváth *et al.*, 1996):

- Regarding the responsible use and protection of natural resources:
 - minimising bird predation
 - better exploitation of natural food resources in fish ponds
 - better control of aquatic weeds in fish ponds
 - exploitation of cheap and safe fish feed resources
 - protection of genetic resources
 - development of water-efficient fish pond technologies.
- Regarding the new ownership and market situation:
 - development of production technologies of exportable carnivorous species
 - development of fish health management technologies
 - studies on the interaction between the fish and the environment (in order to eliminate intake and accumulation of harmful substances in the fish flesh)
 - elaboration of criteria for 'fish bio-products'
 - improvement of the quality of fish and fish products (including genetic improvement)
 - studies with special regard to the economics of small enterprises
 - elaboration of standards conforming to the EU.

Promising R&D work, which is related to some of the issues described above, has already started. These studies are financed through competitive grant funds of the Ministry of Agriculture and Rural Development (FVM), and the National Committee for Technological Development (OMFB). The newly established Agricultural Marketing Centre in the FVM also provides financial assistance to improve the competitiveness of fish and fish products on export markets. With financial help of the OMFB, HAKI also joined the AQUAFLOW network, which is an EU-sponsored project to improve exchange

of information between scientists and small and medium enterprises (SMEs) on a European scale. Since business management and marketing have been identified as weaknesses of the fish production sector, HAKI organised a Symposium on 'Marketing and Business Management' with FAO EASTFISH, Copenhagen, in 1996. There will be another nationwide symposium on this field in 1998 with the involvement of the Natural Resources Institute, UK.

CASE STUDY: Economy of Pond Fish Production in 'Szarvasi Halas' Fish Farm

The private company 'Szarvasi Halas' Fish Farm was established in 1994 during the restructuring of HAKI. Nine former employees of the institute operate an area of 151 ha fish pond and 93 ha land for cereal production as fish feed. The private farm owns only some machines and small facilities: the ponds, land and major facilities (fish hatchery, stores, service buildings) are rented from the institute. The staff comprises: one managing director; one chief fisherman; three fishermen; four labourers. The farm produces 20

Table 2: Cost structure of pond fish production, Szarvasi Halas' Fish Farm

Cost items	%
Material	60–65
Feed	22–25
Stocking material	45–50
Water	13–16
Manure, fertiliser	8
Others	5
Salaries	20–22
Services	5–10
Maintenance and depreciation	5–8
Other costs	2–3
Overheads	5–8

tonnes of fingerlings (one-summer-old fish), 60 tonnes of two-summer-old fish, and 20 tonnes of market-size fish (three-summer-old fish) annually. The farm has its own brood-stock and also produces nursed fry, which give about 8–10% of the total income. Composition of the produced species is: 85% common carp; 6% grass carp; 5% silver carp; 2% pike-perch; 2% catfish. Besides commercial fish production, the farm collaborates with HAKI through contracts, in the maintenance of common carp gene bank, R&D projects and extension. The cost structure of their fish production is shown in Table 2.

The cost structure corresponds well to that of the national average, although the material costs (especially water) are higher than the average due to the higher intensity level at the farm. The farm overheads are much lower than the national average, a fact which indicates the possibilities to increase profitability at other farms by more efficient staffing and management. The total costs at 'Szarvasi Halas' Fish Farm are about USD 1500–1600/ha/year.

The income structure of the farm is 80% from fish production, 15% from cereal production, and 5% from services. In pond fish production the yields of one-summer-old, two-summer-old and market-size fish are 700, 1200 and 1200 kg/ha respectively: 80% of their production is sold directly to angling clubs, 10% to fish traders and 10% to processors. Anglers have been identified as reliable buyers who are ready to pay a higher price than traders who sell the fish in retail shops. Angling clubs and associations are important buyers of pond fish farm, although the majority of the total pond production

(about 65%) is sold to traders in Hungary. The income of the farm is about USD 1800–1900/ha, thus they can achieve a profit of about USD 300/ha.

Financing the production and maintaining a balanced cash flow are the main problems of the management. Sixty percent of the income falls in the harvesting period in October and November, and 40% in the spring when the larvae and nursed fry are sold. In the remaining period of the year the farm has practically no income. However, the farm has been able to finance production without taking out a loan from the bank. Furthermore, it is difficult for the farm to obtain a bank loan, because they rent the ponds and land, and their own assets are of limited value. Various services, the income from R&D projects, and agricultural subsidies help to balance the cash flow. Fish producers can apply for an agricultural subsidy, which is about USD 14/ha fish pond area. The farm invests about 4% of the annual revenue in buying new machines, equipment and tools. About 6% of the annual revenue is used for reconstruction of ponds and buildings. Agricultural subsidy is available for investments, which is 30% of the net value of the new machines, vehicles and equipment, and 25–40% of the net cost of construction works.

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Fisheries Direct Link Programme in Moldova – Transition to the Market-Driven Economy

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ABSTRACT

The current situation of the fisheries sector in the Republic of Moldova is discussed. In conditions of economic crisis, assistance to exporters interested in the assimilation of the national fish market could be valued as the easiest route to directed support and development of the national Fisheries Industry Group. Direct links between companies and institutions interested in the possibilities of assimilation will be considered as a way of management under the conditions of a new free market for Moldova.

INTRODUCTION

The PISCICOLA Association, comprising 23 fisheries enterprises, represents the Fisheries Industry Group of the Republic of Moldova. The main areas of activity of these enterprises are: freshwater pond aquaculture, fishing in natural basins, and processing — mainly salting and smoking — imported marine fish for supplying the national fishery market.

Following the breakdown of the former USSR, large capital-intensive structures of most fishery enterprises in Moldova, which were very bureaucratic and highly specialised, suffered from the governmental crisis, power failures and from losses of productive assets during privatisation. Finally, what was very intensive pond aquaculture in the Republic could be operated only at an extensive level. Previously dominant common carp (*Cyprinus carpio* L.) became less common than the comparatively new herbivorous carps (*Aristichthys nobilis* Rich. and *Hypophthalmichthys molitrix* Val.) which do not require permanent artificial feeding. The difficult financial situation in these enterprises, as well as in the Government, led to a disastrous collapse in funding for the applied scientific institute of the sector, the Fisheries Research Station. This was immediately reflected in the technological level of fish production.

TOWARDS TRANSITION

Aquaculture as an industry is characterised by a very close relationship between profit and the state of the surrounding environment. During the Soviet regime a range of aquaculture enterprises had been developed in Moldova for restocking fish species endangered by urban activity, such as the fish breeding farms, Dniester and Gura-Bicului. The economic crisis has led to a situation where restoration of fish stocks in natural basins has begun to decrease rapidly. The National Environmental Action Plan of Moldova has been created with the help of different international financing institutions.

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However, the Government's National Strategic Action Plan for Environmental Protection (Ministry of Environment, 1998) was badly affected by the economic crises and did not have any positive significant effect on fishery enterprises until now. At the same time the Fisheries Research Station, which for a long time provided environmental guidance to government institutions through research and provided technical expertise to fisheries enterprises (dividing its costs between the Government and private sector), was unable to respond without significant financing.

Many of the processing and retail facilities within the fisheries sector in Moldova have been lost during privatisation because they were unable to respond to the rapidly changing conditions of the free market. Financial deficit has led to a situation where local investment is rare. Otherwise the monopoly of existing internal investors allows them to raise the interest rate for credits to levels not less than 40%, which is obviously unacceptable for the fish farming business (Borta, 1997). Living standards in the Republic have fallen dramatically. The minimal per capita budget in April 1997 was USD 102, including the food basket of USD 47 (L. Gutsu, personal communication). External investments were made difficult by the slow development, insufficiently developed national legislation, and expensive marketing research and consulting services.

THE LINK PROGRAMME

However, in 1997 the situation improved. The development of legislation allowed the implementation of external capital in the national economy. Accumulation of the capital by some of the private companies has led to a restoration of productive activity, including aquaculture, on a new, private base. Low labour costs have led to the practice of international joint ventures being organised. Fish markets have begun to be supplied by imported seafood corresponding with free market laws. In 1997 the market was only 20% filled, in 1998 it is already 25–30% filled. Applied scientific institutions, including the Fisheries Research Station, have started to obtain grants for the implementation of programmes (initially outside Moldova). Some of the most successful fisheries enterprises (like Costesti Joint-Stock Society) have also created new job opportunities. Direct linkages have appeared between exporters and enterprises importing, processing and retailing products through the local markets of Moldova which are not yet covered by national production.

Therefore, some limitations within the system have worked towards the advantages of others. If the national enterprises cannot supply the local markets with fishery products and are unable to secure the level of investments to do this, they will have to involve other partners which are much needed in this market. Stable direct links between partners could create an impact to speed up investment and financial support for their own business activity. This could be viewed as the element of management in free market, directing profit (obtained from imports) into national fishery industry support and development.

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Preparing Financial Proposals and Project Financing

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ABSTRACT

Perhaps the most commonly heard phrase in Central and Eastern European countries (CEECs) enterprise development is "yes I have good products and know that the market is there, but I cannot get a credit line to finance the necessary modernisation and expansion". The underlying problem, however, is the combination of a traditional fear of accessing local and/or international credit, prohibitive costs of the credit, lack of knowledge of alternative sources of financing and, finally, how to prepare a proper presentation of the business idea. With the exception of venture capital funds, most development financing institutions and banks have their own concept of the structure and contents of a business plan. Though varying in scope and requirement, a preparatory study is essential, as credit managers need a basis for their decision when prioritising scarce means between competing projects.

WHY ARE FINANCIAL PROPOSALS NEEDED AND WHO NEEDS THEM?

A common practice of project proponents is to try to reduce the pre-project work to a bare minimum with the idea of saving money and time. The crucial issue may well appear to be a concern to get the investment project ready for operation before the next season. Quite often an additional argument is that the proponent wishes to carry out the project on his own thus gaining all returns and benefits himself. Though technically this may prove an option, it is hardly ever sound business in the financial sense.

If the envisaged project is of a scope and scale that makes it interesting to external (western) partners, a venue of partnership is optional. Partnership has several benefits: it reduces the cost of financing by increasing the equity element of the package and, often, the partner is able to bring supplementary equity funds and loans, with lower interest, from a financing institution of his country. Eventually, funding from a local intermediary bank may also be applicable. Furthermore a joint venture may be able to attract regional or international financing of the same nature. Finally, the partner provides assistance with marketing and technical aspects.

However, access to partners and funding by financing institutions requires that the project is analysed and presented according to international standards. The financing institutions and intermediary banks may have varying formats for the documents needed, but common to most is the need for a feasibility assessment of the project carried out by an independent consultant. In this paper a structured approach to investment project planning is recommended in order to optimise the financing package and other key aspects of the project. It requires that the investment project goes through carefully

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planned phases with the aim of optimising the final result technically as well as financially. A structured approach in combination with a satisfactory level of openness helps create the trust and confidence that is the backbone of successful attraction of external business partnership and financing.

A STRUCTURED APPROACH

The structured approach recommended by EASTFISH is composed of three phases:

- Proper project identification
- Feasibility assessment
- Business plan.

Common to all phases is the need for a systematic approach based on open dialogue and partnership which will ease the process from step to step.

Project identification

The purpose of the identification phase is to provide a clear picture of the owner (the proponent), location, project idea, main market addressed, along with a very rough estimate of the investment required, and an indication of the type of partnership needed. Finally, the ownership structure is important. This should not be limited to the formal organisation diagram. In fact, a foreign partner is often most concerned with who the future partners are, i.e. a presentation of the owners and their background is needed.

It is noted that the project concept will mainly refer to a relationship between the output products and markets, i.e. the type(s) of product(s) to be produced and their expected markets. Most foreign investors are looking for partners that service the local and/or regional markets and these often represent potential markets for their own products. Export to western countries will require detailed knowledge of the product and valid production standards, often requiring substantial investment in quality control systems and product development. Aiming at exports is best done with a western partner involved as the sanitary and health regulations are quite demanding. Besides, competition is tough as producers from western countries have had to optimise their production to stay in the market.

It is also necessary to indicate whether the project will use existing facilities or will require entirely new development of land, infrastructure, buildings and equipment. Totally new development schemes should involve a partner with access to, e.g. energy-saving technologies and environmental protections systems. Without concern for energy and environmental aspects from the onset, it may prove difficult to attract partners and sources of supplementary financing.

Feasibility assessment

Attracting financing and partnership will involve an early assessment of the project concept. This is commonly referred to as a feasibility study of the market, the technology to be employed, company organisation and management, and financial aspects.

Today the methodology of feasibility assessment is well established. Strategic investors, development financing institutions, banks and development agencies all require that an independent assessment of the project is carried out before a decision to become financially committed is made. Venture funds and other portfolio investors may be less

demanding. But at the end of the day a financial commitment is taking a risk and the best way to limit the risk is to have a neutral agent carry out an assessment. Neutrality is required as the investor often represents other capital providers than just himself.

The requirements as to the contents of the feasibility study do not vary greatly between the funding agencies. Formats for presentation differ as do the degree of detail and depth of analysis. In general, the feasibility study should encompass the present status and activities of the proposing company and provide detailed presentation of the new project. The common features of a study are briefly outlined below.

- **Company background.** Give a concise description of the history of the company, present ownership and an extract from the annual audited accounts. Using an internationally acknowledged auditing company often improves the trustworthiness of the enterprise and its managers. Present the main activities of the company with an indication of the assets held and their production capacity.

A brief overview of the product being marketed and the market position, broken down by domestic and export, are needed with information of volumes traded and prices obtained. To this section should be annexed a presentation of the owners with a summary of their curricula vitae.

- **Project justification and concept.** Basically this means answering the question: why is this investment needed? Give a clear definition of the business idea — the target market(s), quality improvements and/or development and introduction of new products. Give a description of the final products that the project would market, including any detail on trademark, packaging and labelling.
- **Objective and strategy.** How do you intend to develop your business in the future? Will you become a key player in the market? Indicate how you intend to achieve your goals. It is important here to indicate whether your need is for a strategic partner or only for equipment with associated financing. Indicate the level of competition that the project is likely to meet for national local competitors and from imports. A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis may be provided as a summary.
- **Market of final products and inputs.** Present an overview of the national and export markets that the project aims to penetrate. Indicate the market share to be covered by each new product planned for marketing. Information on product standards valid for each market, price and terms of payment, and other delivery aspects should be included. A plan of the distribution system, marketing, and promotion efforts of the products with an indication of the associated costs should be given.
- **The investment** (technology, environmental issues and investment cost). The location chosen for the project should be assessed with respect to availability of water, drainage, access to infrastructures, such as road/rail, electricity etc. A layout of the plant or farm with details of the flow of production is needed. Drawings should specify the level of technology required. Technical parameters of production should be indicated per main equipment and shift. It would be beneficial to potential investors to indicate how Hazard Analysis Critical Control Point (HACCP) systems and other quality control measures are to be handled. Measures to reduce pollution and other environmental control should be clearly indicated. A table with detailed investment costs should be attached including all items identified.

- **Plan of operation.** This section describes the daily operation of the project. Therefore all steps in the production flow should be listed with an indication of staff employed, calculation of raw and intermediary material needs, and consumable items (electricity, water, cost of discharge of process water and solid wastes etc.). Tables listing *variable* and *fixed* costs of production at full capacity should be established. Variable costs are those that vary with the level of production actually employed such as raw material, feed, empty cans, other intermediary input, workers' salary, and transport of goods. Typically, fixed costs include marketing, repair and maintenance, a management cost, insurance, and taxes and charges etc. The distinction between variable and fixed cost has to reflect the accounting laws of the country. On this basis the cost per unit of production (e.g. cost per can or per kilo of fish) should be calculated. The expected revenue from sales and other potential valorisation of by-products of wastes should be given in a separate table. Working capital needs are estimated using the production cycle as the point of departure.
- **Ownership and management structure.** The preferred new ownership structure should be given with an indication of the share allocation to each party. A diagram should be provided, showing the management structure with accompanying text explaining the responsibilities assigned to each member and the division of powers between the Board of Directors and the daily management. Detailed job descriptions should be annexed.
- **Plan of financing and financial assessment.** A plan of how to finance the investment and working capital needs has to be established. This may involve your own company, an outside investor (national or international) and one or more financing institutions. Otherwise this section is analytical. All data collated above will be summarised in a calculation model. The result will indicate the financial feasibility over a pre-determined economic lifetime of the project, say 10–15 years. *Dynamic* results, otherwise referred to as project worth calculations, are derived using the net cash flow over the project's economic lifetime. Conglomerate indicators used are net present value (NPV) and the internal rate of return (IRR). If the results are promising the project's solidity will be tested against sensitivity to more hostile conditions, such as lower output prices, or higher investment costs.

Finally, *static* key indicators are calculated using single project years as the basis. This would include the most common financial key performance indicators, such as pay-back periods and break-even points, returns on fixed assets and equity, and creditworthiness as debt-equity ratios will be calculated. Investors are mostly concerned with the static results, as these will reflect the level of risk-taking and the expected profitability of the proposed investment.

A plan of the financial needs of the overall project has to be established. The different sources of funding have to match the financial needs with clearly identified terms of financing.

- **Plan of implementation.** A detailed plan of the sequence of activities leading towards the implementation of the project has to be established. The plan should indicate the party responsible for the timely execution of each activity.

Perhaps the above approach seems too comprehensive and resource consuming. However, the objective is to attract potential partners and, possibly, financing institutions

towards your project. As it is competing with other projects it has to provide the necessary information in a clear and concise fashion to produce a favourable decision.

Business plan

The business planning phase follows if the feasibility phase indicates a sound project. In real life the two phases are often closely linked and the partnership is more or less agreed upon. The business plan thus confirms what is agreed and serves the purpose of satisfying the needs for the eventual sources of supplementary financing. However, the business plan is also important from the point of view of presenting together the complex of necessary documents that constitutes a full joint venture. Additionally, it outlines the agreed-upon procedure that leads to the formal registration of the new company, which is, typically, embedded into a 'Letter of Intention' signed between the parties.

Among the more important steps are confirmation of the legal and financial status of the company and the ownership of the local assets such as land, buildings and equipment. The procedure is called a 'due diligence' examination. As the underlying documentation often reflects the status of the existing enterprise and is, for obvious reasons, written in the local language, it will be necessary to engage a local law firm (with a proven track record in the setting up of international joint ventures) and a local auditing company. Their aim is to establish the legal status and to propose a fair value of the enterprise. This value will provide the basis for negotiating the sale price and subsequently the shares to be financed by the different partners.

Though the terms and titles of the documents needed may vary in different countries the basic documents to register a full joint venture are:

- Statute and By-laws
- Shareholders' Agreement
- Transfer of Shares Agreement
- Formal documents related to the needs of local authorities:
 - company house
 - court registration
 - title deeds to land and buildings
 - concessions to use natural resources such as river or underground water.

Once the formal requirements are completed the joint venture is established. From now on the business plan becomes the plan of operation and management of the project. It sets out the defined targets of production and marketing and provides clear guidelines on how to monitor and evaluate the project as it evolves.

PROJECT FINANCING AND CREDIT

This topic is only briefly touched upon; but it is useful to be acquainted with the most common sources of financing as the day-to-day jargon is often extensive and confusing for non-professionals in the area of financing. First and foremost, however, it is again stressed that a well-structured project presentation is not only the right but, more frequently, also the only approach to open access to these additional sources of financing. Only four types of sources will be presented.

- Strategic investor
- Foreign portfolio equity investment

- > Venture capital investor
- > Export credit and investment protection

Strategic investor

The strategic investor is typically a company that is engaged in the production of goods and services along the lines that the joint project is proposing. This type of investor wants to expand his own business using the project as a vehicle to gain access to new markets. He has a long-term perspective with the investment (5–10 years) and is likely to become a partner in technology, marketing and management. The investment itself is typically taking up more than 10%, or even more than 50%, of the new project's assets. He may invest in terms of money (shares), in kind (assets such as machinery and equipment) and/or know-how. The strategic investors are typically:

- > fishing and trading companies
- > processing companies
- > aquaculture producers
- > sometimes: equipment suppliers.

In financing terms, strategic investment is commonly referred to as foreign direct investment (FDI). Though the borderlines are indistinct the term FDI is used when the level of investment (in money or kind) into an incorporated company is minimum, i.e. 10%. It may escalate up to full control, i.e. 100% ownership. The FDI investor buys a part of the ordinary share (with voting rights) and thereby also gets the right to share the profits and participate actively in the management. In fact it is more reasonable to argue that it is the level of management involvement/control that defines whether the investment is considered FDI or 'portfolio investment'.

Foreign portfolio equity investment

The level of investment in foreign portfolio equity investment (FPEI) is generally below the 10% limit and is usually done by buying an ordinary share. The motive for investing is to get the best possible return on the investment. FPEI investors are short term only (1–3 years) and represent institutional types of investors (banks, pension funds, insurance companies, and development finance institutions).

Among the more notable portfolio investors are the development agencies and especially the branches that are devoted to support private sector development. Regional and international development banks have established credit lines that local enterprises may access through intermediary banks in their own country. The credit lines typically will allow investment in terms of loans and share capital. The project evaluation method applied is that of the mother bank, but to be carried by the staff of the intermediary banks or by external consultants. The characteristics of the terms of investment are:

- > aims to finance commercially viable projects
- > equity and loan participation up to 35% of the project assets
- > medium-term participation
- > requires collateral (up to 150% of the loan amount applied for)
- > international partners.

Parallel organisations exist at a bilateral level and are commonly referred to as 'Development Finance Institutions'; today 10 are in operation in western Europe. The main objective is to support the motherland industries and consequently there is a

requirement for partnership from the motherland. Otherwise they operate as development banks.

Venture capital investor

A venture capital investor is typically organised as a fund with the aim to promote young industries with a high growth potential. The interest is to gain a good return on the investment, but due to the nature of the investment a venture capital investor often stays longer (3–7 years) with the project. This group may not require a formal assessment of the project, but will focus entirely on the reputation of the owners and the capabilities of the daily managers.

Export credit and investment protection

A number of other financial instruments exist aiming at promoting and insuring exports from the motherland: the most notable source is export credit and guarantee. The actual operating aspects of export credits vary from country to country but a common theme is that they may be used to finance the purchase of raw material (fish, eggs, fees, empty cans etc.) and machinery and equipment. Terms vary considerably from one year up to 10 years. The associated guarantees are there to assure that the guarantor will pay the exporter, in the end, a government agency, if the receiver defaults. The cost of the guarantee is related to the rating of the beneficiary country and the end-receiver of the goods. In a similar manner a number of countries have signed bilateral agreements to protect FDI and portfolio investment.

CONCLUSION

When international partnership is sought, the rate of success in attracting partners and supplementary financing increases dramatically if the project concept is presented and developed through a structured approach. It may be necessary, for formal reasons as well as for reasons of neutrality, to engage an external consultant to assist in the preparation of the feasibility assessment and the business plan. But the final decision by a foreign investor to commit themselves to a project rests to a large extent with the impression gained of the management style and of the managers themselves. Openness and dialogue are the fundamentals of successful collaboration.

Short Analysis of Price and Production of Common Carp and Sea Bass over the Last Decade in Croatia¹

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ABSTRACT

Over the last decade the Croatian fishery sector has gone through the process of transition and large economic upheaval caused by the war. These changes can best be presented by comparing wholesale prices and total production of various species: examples are given for the main freshwater and marine aquaculture species, the common carp (*Cyprinus carpio*) and sea bass (*Dicentrarchus labrax*). Also some general information on the fishery sector is given.

GENERAL FISHERY SECTOR INFORMATION

► Sea fishery and mariculture

Area of the Republic of Croatia	56 000 km ²
Adriatic Sea	135 000 km ²
Croatian territorial sea	31 000 km ²
Open sea (future exclusive economic zone)	23 000 km ²

No. of fishing boats	Larger than 15 GT	Smaller than 15 GT	Total
Trawlers	300	470	770
Purse-seiners	66	195	261
Total	366	665	1 031

No. of small fishing boats	14 758
No. of small boats registered for recreation and sport (participate in fishing)	79 000
No. of employees in sea fishery sector	15 000
No. of fishing companies	360
No. of recreational sports fishermen	20 000

Annual capacity of fish processing industry	40 000 t
Average annual catch in last decade	33 000 t
Annual mariculture production	2 000 t fish and 1 500 t shellfish
Average annual fish processing industry production in last decade	20 000 t
Annual exports	17 000 t
Annual imports	9 000 t
Consumption per capita (estimate)	7 kg

¹ This paper was not presented at the Symposium.

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➤ Freshwater fishery and aquaculture

Warm-water fish ponds (<i>Cyprinidae</i> production)	12 500 ha
Cold-water fish ponds	2 800 ha
No. of employees	1 000
No. of recreational and sports fishermen	40 000

SOURCE OF DATA

Data for analysis can be obtained from official annual production statistics as well as records of the current wholesale market prices. Unfortunately official statistics on the marine and freshwater fishery (catch) are incomplete and are therefore not suitable for serious analysis and research of the recent movements in the fishery sector. However we can be sure that the records for aquaculture production are acceptable for this comparison; data for the last 10 years have been used to compile the charts (Figure 1). The last decade was a period of large economic changes including redefinition of property, crumbling of the former Yugoslav market and direct war damage as well as economic recession caused by the war itself.

PRICE AND PRODUCTION

Comparison of production and prices shows us that some production can be influenced not only by the transition but can also be a consequence of other economic changes caused by social changes.

Figure 1 shows the relationships between production and wholesale price for sea bass and carp over the last decade. Production of sea bass has increased independently of the wholesale price and demands of the market and its price has fallen until 1995. With the total production increasing three-fold, despite the price and finally profit rates, we have to ask ourselves what has happened with production. The initial price was very high because it was a brand new product and demand was very high. For a few years production and demand equalised but demand for the Croatian farmed sea bass has remained higher than production cost. Naturally, after a period of crisis and bankruptcies, producers that survived increased their prices because demand was once again higher than production.

It is worth noting that fisheries was one of the very few economic sectors or production systems which was not badly damaged by the war mostly because it was export-oriented and away from the area directly damaged by the war.

It is clear from the figure that carp production has been almost destroyed over the past 10 years. Initially, production was remarkable with a very stable market and wholesale prices. Production was mostly oriented to the former Yugoslav market and partially to the foreign market. During the war and aggression, this production was at stake because it stays out of the previous market. Demand from foreign markets did not appear and overproduction for the small Croatian market caused a decrease in the wholesale prices. The overall situation for the warm-water aquaculture was made even worse by direct war damage or occupation by the occupation forces. This situation caused a very large decrease in the total annual production which was temporarily less than 3000 tonnes.

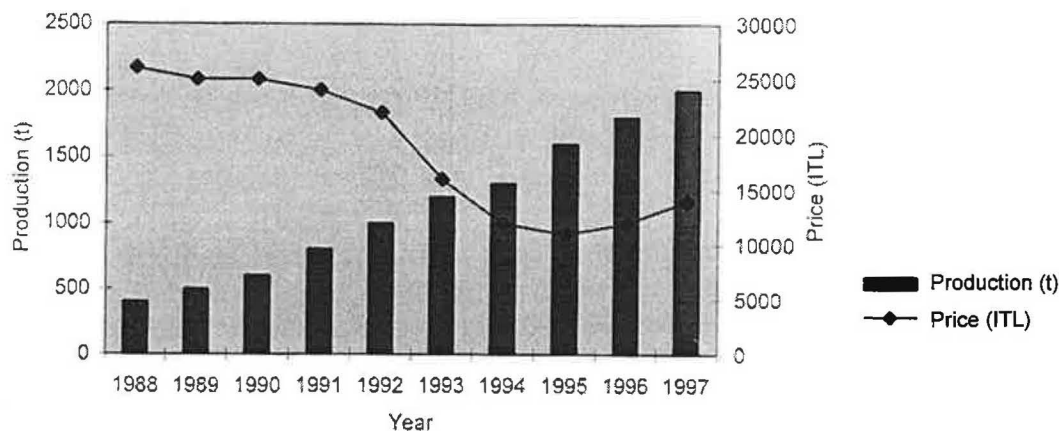
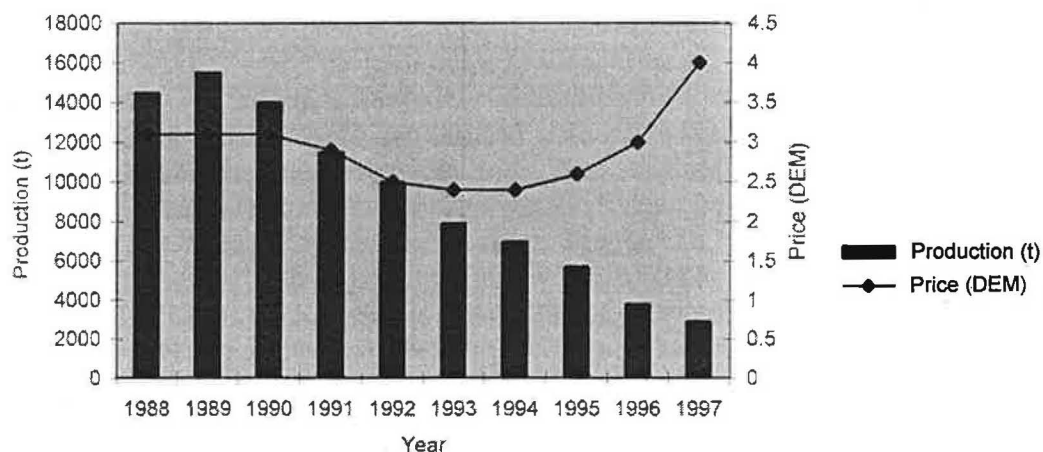
Sea bass**Common carp**

Figure 1: Production and wholesale prices of sea bass and common carp, 1988–97 [wholesale price assumed to be per kilo fish]

CONCLUSIONS

These two examples show that the level of the production is not only influenced by the wholesale prices but also by a very wide range of other preconditions. Finally we have to say the wholesale price is the most important — but not the only — consideration for any successful production. Sometimes factors other than wholesale prices can have more effect on production level despite the importance of the wholesale price.

Fisheries of Moldova: Past, Present and Future Perspectives¹

Victor Bortă², PISCICOLA Association, Republic of Moldova

ABSTRACT

The dynamics of fisheries production data for the last decade show significant potential for fishery industry development in Moldova. In 1986–89 the annual production of commercial fish from aquaculture was 9000–9500 tonnes; in 1996 only 1211 tonnes were produced. The main factors underlying the fisheries industry depression in Moldova are limited credit in local banks, the high interest rate for credit, and a deficit of local investment. The current situation in fisheries and the under-supply of fish to the markets (only 25–30% are used) could be improved by successful international collaboration in the near future.

INTRODUCTION

The Republic of Moldova is a member of the Commonwealth of Independent States (CIS) and is a small (33 800 km²), landlocked country with a population of 4 320 000 (1997 estimate), located between Romania and Ukraine. The Republic of Moldova emerged as an independent state from the break-up of the former Soviet Union and officially acceded to independence on 27 August 1991. According to the Land Cadastre of the Republic of Moldova the water fund in January 1998 was 47 000 ha including inland waters of 19 200 ha. The PISCICOLA Association unites 23 fisheries enterprises involved in freshwater aquaculture: 7300 ha of ponds are used for aquaculture in the Republic.

In 1986–89 fisheries enterprises farmed 9000–9500 tonnes of commercial fish and 50–55 million brood-stock fishes. Seafood import at this time was 40 000–42 000 t/year, and 24–32 millions cans of fish. Fish consumption was 13.2 kg/person/year. During transition to a market economy (1991–97) there was significant reduction in fisheries production and in seafood imports. In 1996 only 4 million cans and 3750 tonnes seafood were imported, and the production of fish from aquaculture was only 1211 tonnes. This has resulted in a lowering of fish consumption to 1 kg/person/year.

The main reasons for the decrease in fish imports and in fish farming were:

- limited credit in local banks
- high interest rate for credit
- shortage of local investment.

CURRENT SITUATION

At present the fish markets in Moldova are only partially supplied (25–30%). There are no specialised fish shops in the regional centres and villages; this has a negative influence

¹ This paper was not presented at the Symposium.

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on delivery of commercial fish to villages where demand for fish is especially high but fish consumption per capita is frequently very low.

The main species of fish for freshwater pond aquaculture in Moldova are common carp (*Cyprinus carpio* L.) and herbivorous carps (*Aristichthys nobilis* Rich. and *Hypophthalmichthys molitrix* Val.). However, in pond fish farms several sturgeon species are farmed, such as paddlefish (*Polyodon spathula* Wall.), stellate sturgeon (*Acipenser stellatus* Pallas), sterlet (*Acipenser ruthenus* L.) and Russian sturgeon (*Acipenser gueldenstaedti* Brandt).

For more than 50 years sustainable development of aquaculture, technology, fish genetics, fish breeding, and fish pathology, water quality control, acclimatisation and reproduction of new fish species has been provided by the main applied scientific research institution, Fisheries Research Station (FRS). Acclimatisation and pond/cage rearing of channel catfish (*Ictalurus punctatus*), grass carp (*Ctenopharyngodon idella* Val.), buffalo (*Ictiobus* spp.), etc. are among the achievements of FRS. One of its main advantages in the former USSR was the development of one of the most genetically clear breeding lines of herbivorous carps (*A. nobilis* Rich. and *H. molitrix* Val.) as brood-stock fishes. Furthermore, FRS controls the state of fish stocks in natural basins like Dniester, Prut etc.

The reputation of the institute and its strong research capacity have attracted internal/national funding. Currently FRS is the partner in the international grant implementation of the European Commission within the Programme Copernicus entitled 'Production of caviar from roe and ovulated oocytes from some farmed sturgeon species'. FRS is a branch of the European Association of Fish Pathologists in Moldova. Despite temporary difficulties, FRS is an active intellectual scientific/technological basis for the Fisheries Industry Group of Moldova at the time of transition to new forms of ownership in the free market.

The change of the ownership of fisheries enterprises in Moldova has progressed in the following way:

- Twenty of the 23 enterprises were included in the privatisation programme of 1995–96 and were put up for auction.
- Fourteen of these enterprises have now been privatised and 6 enterprises have been partly privatised. Partly privatised enterprises had been included in the Privatisation Programme for money.
- Auctions take place every three months to sell state shares in these enterprises.
- Three enterprises are state-owned and have received the status of breeding fish farm.

THE FUTURE

The Fisheries Industry Group of Moldova has the necessary resources for successful development in the near future. It should be possible to rear 24 000 tonnes of commercial fishes each year in the fisheries basins in Moldova if access to credit can be organised for fish farms — for 6 months — with internationally agreed interest rates. Qualified and cheap labour (average monthly salary of a fisheries worker today is USD 60) is available in the Republic and it is mainly a free local national fish market. This sustainable development is possible in conditions of international collaboration with partners on the mutually profitable basis.

Fisheries Complex of North-West Russia¹

Ian Payne, Marine Resources Assessment Group, UK

ABSTRACT

This paper reports on work carried out under the EU Technical Assistance for the Commonwealth of Independent States (TACIS) Project. The background to and the current situation of the fisheries complex of Murmansk and Arkhangelsk, in north-west Russia, are outlined, and the objectives to aim for in the fisheries sector are listed. From an extensive review of the fishing industry of north-west Russia, five main lines of action are proposed to meet the objectives of the project. The fisheries sector of the north-west is clearly viable and possesses reserves of a commodity much in demand both at home and elsewhere. The capacity to add value to good quality raw material, which already has a ready market, has not yet been realised but has great significance to the future development of the industry.

BACKGROUND

Before 1991 the Soviet Union was one of the top three fish producing nations in the world. The fisheries complex of north-west Russia is situated in and around Murmansk and Arkhangelsk. At this time this region landed around 1.9 million tonnes of fish annually: currently the figure is 219 000 tonnes. Previously, the fleet from Murmansk fished worldwide but this has been curtailed by structural and financial difficulties. At present, the fleet operates largely in the Barents and Norwegian seas, although some vessels may still fish in the western North Atlantic. Traditionally, the prime species are the demersal cod and haddock, although herring and mackerel are also important.

There are no indications that the demersal stocks of the Barents Sea are unduly over-exploited. A feature of the demersal catch over the last few years, however, has been a declining contribution by cod and haddock. There has been an increase in the proportion of 'mixed species' landed to cod and haddock, with the latter contributing now less than half the landings of the near-shore fleet. A change in the spectrum of species landed is therefore emerging. Cod is always marketable and is accepted through Norway, the UK, Germany and western Europe, as well as on the domestic market. New species, however, present new problems.

After 1991, most vessels were owned by three large joint-stock companies, the Murmansk Trawling Fleet, Murmansk Rybprom and Sevrybkhodflot. In 1992, the Union of Northern Fishing Industrialists was set up to represent the interests of small and medium-sized businesses dependent upon the fisheries of the Northern Basin. This assisted the smaller companies to obtain access to quotas, typically in the near-shore rather than distant waters.

CURRENT SITUATION AND PRESENT TRENDS

Present production is relatively high but profitability is very low; this is partly due to fuel costs which are currently three times higher than they were five to six years ago, whilst

¹ This paper was not presented at the Symposium.

corresponding increases in fish prices have been much lower. In addition to organisational problems, there are considerable legal difficulties due to regulation and taxation constraints placed upon the port. Tax and customs regulations are extremely complicated, often entailing high costs of long delays. It is this situation which leads many vessel owners to land their fish in Norway or EU coastal states rather than in their home ports — some of this fish may ultimately be re-imported by land. The reluctance of vessels to land at their home port also means that repairs and maintenance are carried out elsewhere to the detriment of the ship repair companies which are now struggling in Murmansk.

There are few companies devoted to processing in Murmansk, perhaps only two or three amongst the 96 in the former Soviet Union. A number of companies, however, do some catching and some processing. Most fish is frozen before landing and little fresh fish is acquired by the market. Secondary processing is relatively basic and includes salting, smoking, marinating and canning of comparatively few products. Although fundamental quality is good for the local market, there is little tertiary processing, and packaging and marketing are limited. Even grading is rarely carried out with most graded products being imported.

The traditional nature of the products takes little heed of the huge changes in social structure and working patterns within the country in recent years. These are features which have a great impact on the acceptability and need for new forms of fish product for domestic and institutional catering. The capacity to add value to good quality raw material, which already has a ready market, has not yet been realised but has great significance to the future development of the industry.

A particular constraint to the development of the sector is the actual marketing of fish, which is carried out in a rather informal fashion and benefits neither producer nor consumer. It is clear that a more integrated system of capture, supply, processing, marketing and distribution is required for the mutual benefit of all parties and to encourage the movement of appropriate fish products into the domestic market. Within the existing industry is the advent of at least one joint-venture company with foreign investment which is successfully pursuing this approach.

In Arkhangelsk the prospects for a modern processing centre will always be difficult because of the seasonal nature of landings. Unlike Murmansk, which is frost-free all year, the port of Arkhangelsk is frozen up for several months during winter. Here, emphasis needs to be on improved marketing and obtaining premium prices for high quality fish.

There remain the prospects of completely new products. At least one company is producing *sashimi*, and seaweed processing is a further option — in the past up to 4000 tonnes of seaweed were harvested each year. Last year the process was restarted and 120 tonnes were produced, largely as a condiment or relish for fish products. Alginate, both in the food processing and medical fields, is a major commodity market.

OBJECTIVES TO AIM FOR

The overall national policy objectives of the Russian Federation in the food and agriculture sector include the need to:

- ensure secure food supply to the Russian population
- develop food production and processing to become net contributors to the national economy.

More specifically, in the fisheries sector the Russian Government wishes to:

- increase sea fish production and consumption
- improve fish processing, storage, transport and marketing
- promote investment in sea fishing and related industries.

These objectives are consistent with those of TACIS (Technical Assistance for the Commonwealth of Independent States) for the food and agriculture sector. Within this sector, however, emphasis has been placed on greater quality control of food products generally and the additional problems of appropriate packaging.

Main project objectives have been laid down as:

- improving supply of fish to the internal market
- assisting regional administration to formulate policies and develop strategies to cope with post-privatisation changes in the fisheries industries
- assisting the fisheries industries to improve outputs from available raw materials, including utilisation of alternate sources of raw materials, and from new product development.

Specific project objectives include:

- support for regional administration of Murmansk and Arkhangelsk to formulate policies and strategies for the effective privatisation, restructuring and development of the industry within the national framework
- providing specialist technical assistance to individual enterprises in processing, marketing and distribution to improve quality and efficiency of supply of fish products
- assisting enterprises improve management organisation
- improving distribution chains for the region to main markets, including the possibilities for the development of wholesale markets in Murmansk and Arkhangelsk
- auditing existing quality standards and systems and providing assistance in implementing improvements to the systems in existing processing plants;
- working with selected processing enterprises to develop new marketable products for under-utilised marine resources
- providing information on the potential for development of aquaculture in the area
- providing training for staff from the regional administration and from industry either on specified overseas courses or *in situ* by way of specialist instruction and seminars.

PROJECT APPROACH AND PLANNING

From a review of the circumstances of the north-west Russian fishing industry and concerted discussions with regional and municipal authorities, the objectives of the project are being met through five main lines of action consistent with the budgetary allocation of the project. The main action points include:

- economic strategy framework for the Murmansk and Arkhangelsk regions
- improved wholesale marketing
- model processing component
- improved distribution and market information system
- development of alternative raw materials.

Economic strategy framework

An overall economic strategy for the sector has been developed which covers both Murmansk and Arkhangelsk oblasts [regions]. There are three main components:

- review of relevant aspects of sector at national, oblast and municipal levels
- formulation of strategy
- dissemination to attract inward investment.

The strategy is being used to identify strengths, weaknesses and opportunities in the sector. Advice is also provided, when required, in the formulation of policy. The final outcomes for the strategic findings have been circulated to investment and funding agencies to help capitalise future development.

Fish and fish products wholesale market

At present fish marketing arrangements in the major fishing centres remain irregular and informal. There is no centre for large- or small-scale buyers to converge. Similarly, sellers have no formal outlet, which leads to logistical confusion within the cities, as quality regulations are unable to be applied. A wholesale market is seen as a catalyst which will attract other service industries and, consequently, will provide a source of new employment. The Murmansk municipality is also prepared for a co-operative venture and will help to provide a site for the market. Some upgraded joint-venture retail outlets already exist in Murmansk. Development of the wholesale network remains, therefore, a high immediate priority.

Planning of the wholesale market component is divided into four phases which recur in chronological order:

- strategic planning (inception)
- detailed design
- implementation
- project extension/replication.

This approach gives maximum flexibility to respond to changing circumstances and to adapt to the fluid market and economic situation. Collaborating with a large local company, which stores 70% of fish passing through Murmansk, and providing an information system linking customers with sellers create a new wholesale climate for the region.

Model processing component

The processing sector is under-capitalised, is often short of raw material and produces a limited number of products for a traditional market which is now changing. There are, however, examples of companies developing new products and implementing new management techniques. One has been selected to input the necessary investment in equipment and management to produce a functioning line with appropriate flexibility to produce some relatively new products, for example breaded products, and with the accompanying necessary packaging and marketing strategy. Relatively simple value-added approaches will increase income to the processors, increase choice to consumers and increase sales opportunities to producers.

Whilst this project is strictly concerned with the post-harvest side of the industry, the need to ensure a reliable throughput of fish for the production line does mean that arrangements with the producers will need to be taken into account. The overall objective

is to produce and integrate a system for producers, through processors and marketing ventures to the most significant increments.

The planning of this component is divided into four phases:

- company review and survey
- financial and technical planning
- tendering and refurbishment
- project extension/replication.

The collaborating company has been selected objectively on the understanding that the functioning line can be used for demonstration purposes to all interested parties.

Model distribution system

Whilst there should be an immediate priority in strengthening the market arrangements within the target oblasts [regions], nevertheless an integrated approach also requires strengthening of suppliers and outlets to more distant and populous markets. The fisheries complex of north-west Russia is accessible to markets in St Petersburg, for example. A domestic joint venture with a food-retailing organisation in such a location could provide a dedicated outlet for the new and traditional products coming from Murmansk. There are signs that this is progressively more feasible. Stimulation of demand in the inland markets, particularly for value-added products, can encourage the fleet to land more at their home ports, in parallel with the appropriate tax and custom reforms.

The phases for this component include:

- identification of markets
- implementation of distribution/market ventures
- project extension/replication.

Development of alternative raw materials

This is probably the most innovative of all the components although in some ways the most fundamental. The change in proportion of landings away from the more traditional cod and haddock to 'mixed species' offers a particular challenge — the same has happened in many European ports. Often, however, the value of some of these 'mixed species' has equalled or exceeded that of the traditional species if landed and marketed in the right fashion. This will require a matching up of what is actually caught with experience within Europe as to what can best be done with these alternative species. Already there are distinctive alternative fish products being made in Murmansk by some small companies, such as *sashimi* and re-textured fish protein, which one company has been preparing successfully.

This component can readily be integrated with the development of the model fish processing line. Generally, however, it will need to go hand in hand with expansion of the coastal fishery. There are some truly innovative options available, most strikingly the use of seaweed — in previous times up to 4000 tonnes were harvested each year. The demand for alginates from seaweed for the food processing industry and for medical use, in a more refined form, is worldwide. Steps have been taken to provide linkages with the French industry to help use the resources.

CONCLUSION

Technical Assistance for the Commonwealth of Independent States (TACIS) projects generally provide relatively small amounts of money for investment and are really to be seen as pump-priming exercises. The key element is to try to use this strategy and model operational units to attract further investment. The fisheries sector of the north-west is clearly viable and possesses reserves of a commodity much in demand both at home and elsewhere. EU countries, where reserves of white fish are at a premium, would do well to consider investment of capital and know-how at this point. The TACIS project is designed to attract and target this investment.

DISCUSSION

László Váradi (HAKI, Hungary). Why is the name of the company 'Steel 94'?

Gheorghe Stefan (Steel '94, Romania). It combines parts of my and my wife's names. The company was registered in 1994.

László Váradi. Are there any other emerging entrepreneurs emerging like you?

Gheorghe Stefan. At present it is atypical, because 99% of the fisheries sector is state-owned. I think you have to be private and take the risk and know exactly what you want. You have to have good knowledge about the business and also, I think, you have to estimate your power and have to know the sector well. I was a State Enterprise manager, I am a fishing engineer and have been working in that sector for 13 years. I know everybody and they know me; it's easier to make a business in that condition.

László Váradi. You mentioned that you purchased 1000 ha. It seems that the key to your success is marketing; do you produce any fish?

Gheorghe Stefan. Yes, in the lake, including European carp, Crucian carp, Wels catfish and *Alburnus*. I rent the lake because sometimes I have a lot of problems with my suppliers, because in the winter lakes are frozen and I have to work much more but in my shops, all the time it's fresh fish and I have to keep the quality. My lake is situated only 20 km from the centre of Bucharest, so the fish are coming to the shop alive and the customers appreciate that.

Dimitry Metsaev (Stanislav Company, Russia). I understand you provide quite a lot of services like importing, stores, delivery, selling in your own stores, processing and aquaculture — aren't you going to specialise, or are you going to keep doing all those kinds of businesses? While 99% of the sector is governmental there isn't so much competition, but aren't you getting confused?

Gheorghe Stefan. That is a very motivated question. Romania has 23 million potential customers. At the moment it is not competitive, you can try everything. If you know exactly what you want to do, you can do everything; all that progress happened in only four years' existence of my company. Tomorrow, if I want I can switch off and concentrate on only one thing, but I think in that transition, it is necessary to use many, many ways to be sure.

Dimitry Metsaev. Do you have any ideas what business you will choose if there will be competition?

Gheorghe Stefan. I told you that my business is in processing.

Dimitry Metsaev. Do you sell in your stores only goods processed by you and imported by you, or do you have any other suppliers in Romania?

Gheorghe Stefan. Actually we buy only whole fish and process them. We directly import fresh, frozen and canned fish and purchase from other importers in Romania. Some we produce and some we import directly.

Unfortunately the recording system failed for the remainder of the discussion session.

SESSION 2

Business Management Training

Chair: Nick Willoughby
Rapporteur: Ian Watson

The Need for Managers to Update Existing Knowledge and Acquire New Skills

John Rogers¹, Natural Resources Institute, UK

ABSTRACT

There have been significant changes from centralised control of the economies in Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) towards more open and flexible free market systems. The challenge this poses to fisheries managers is presented. Enterprise managers are now required to work in new ways, for which their previous training and experience is inadequate. The need to upgrade existing skills and learn new ones is discussed. The challenge of working professionals identifying and gaining access to suitable courses is considered.

INTRODUCTION

The changes in the past decade in Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) have been dramatic and wide-ranging, with many economies and political systems still in the process of transition. This is in marked contrast to the previous communist systems which, although inflexible and constrained with strong vertical integration, were very well established and relatively stable. Most managers and administrators knew how the system worked and their place within it. The free market system is inherently more unstable than the state-run centralised system, particularly in periods of transition. Managers and administrators have had to learn — very quickly — to cope with this process of continuing change and have to be able to deal with new problems for which they have had very little training or experience. The extent of this challenge should not be underestimated. I believe it is one of the most crucial factors for the successful development of private fisheries enterprises in the region. Managers have gone from being responsible for some of the activities of a small part of a very large machine, to being responsible for all the activities of a small but nonetheless very complex enterprise.

THE TASK AHEAD

This Symposium is intended to provide a forum to discuss some of the key topics for the development of viable, privately owned fisheries enterprises. All of the topics require managers to update their existing knowledge and skills, or begin to learn about completely new topics. For example, Hazard Analysis Critical Control Points (HACCP) has emerged only relatively recently as a system to ensure safety in fish handling and processing operations. Gaining access and experience in these new subjects is not easy. Many educational systems are inherently conservative and bureaucratic and, as a consequence, have been slow to change. In some countries undergraduate curricula have hardly changed in the last 20 years. Even less effort has been made to provide training for working professionals, which is what most fisheries managers want. Managers, by

¹ John Rogers is a graduate freshwater biologist with extensive, worldwide fisheries development experience, particularly in post-harvest handling, processing and marketing. He is currently lead professional in Fisheries and Aquatic Resources within the NRI Natural Resources Management Department. For the past five years he has managed the UK Know How Fund Fisheries Project in Romania.

definition, have a job to do that takes up a lot of their time and requires their presence for most of the time. Even if suitable courses were available most managers could not take three months, let alone a year, off to attend a course. Some courses, such as part-time MBAs, are available but many managers do not have suitable entry level qualifications or experience for enrolment.

Our own experience in Romania has highlighted the problem. Initial attempts to present a series of short, residential courses of 2–4 weeks in collaboration with a university were only partly successful for a number of reasons. Some managers reported that they could not afford to take one month away from their job, while others took days out of the course to deal with urgent business. Following meetings with sector managers, a training needs analysis (TNA) study (and see next paper) and considerable discussion, it was decided that distance learning might provide an acceptable mechanism to deliver courses to working managers. The work of BROCAD (British-Romanian Distance Learning Business Training Foundation) in Romania in this regard is described later in this Session (see the paper by Coman and Mihai). So far BROCAD has concentrated on a basic business management course, but plans are being developed to offer a range of new courses in different subject areas. Further TNA studies with sector managers are being carried out to determine what is wanted/needed and how it might be developed and delivered. Distance learning may be appropriate for some subjects, but it will not work for practical courses where access to processing lines and equipment is essential.

CHANGES NEEDED

Many of the countries in the region have begun the process of applying for membership of the European Union. This will add to the problem of managers, since they not only have to develop viable businesses at the national level, but they must also prepare to meet the conditions of the EU at some time in the future.

The introduction above outlines some of the challenges managers must face if they are to be successful in the future. One of the most difficult tasks will be to put to one side some of their previous training and experience, which is no longer relevant for commercial business in a free market economy. Another problem is that some senior managers, with half a lifetime of experience, may be reluctant to admit that they do not understand some subjects, or to join courses.

An important aspect of the changes needed is that they involve a wide range of topics. Some of these involve updating existing skills or acquiring completely new technical knowledge. Others require the adoption of new approaches to tackling problems and methods of working. The net result is that managers must be familiar with, even if not expert in, many subjects. To achieve this, it is also important that they understand when it is necessary to bring in specialists to provide advice or technical inputs.

One key requirement — for which it is difficult to obtain training — is that managers need to be open-minded and flexible so that they can develop optimal solutions to changing situations. Ensuring the personnel involved make these essential changes in mental attitude is the greatest challenge.

As a fisheries development and project management specialist from an 'institutional' background, I am aware of my own inadequacies in the commercial sector. Certainly the experience of the past five years in Romania has shown that we have had to adopt flexible and innovative approaches. The magnitude of the problem facing managers in

the sector who have not had experience of how free market economies and enterprises function should not be underestimated.

Virtually all managers have completed formal, university level academic courses. Is more theoretical training needed, or is more practical 'how to do it' or 'how to use it' training more appropriate? We all drive cars, but not all of us know, or need to know, how to service and repair them — we hire other people to do that.

MEETING THE CHALLENGE

To meet the challenge of the future, managers face a difficult and complex task. A series of stages can be developed to help clarify the process:

➤ Identify needs

- A first step could be to appraise their own strengths and weaknesses, in personal and enterprise terms, to identify what new skills are needed and where existing skills need upgrading.
- It may be appropriate, if they are available, to call in a specialist to carry out an impartial TNA, which may help to identify weaknesses and needs.
- Meeting the identified needs is the next logical step. Is suitable training available, from where and in what form?
- Prepare a prioritised list of training needs and develop a draft programme to access what is required.

➤ How to meet needs

- Decide where short-term consultancy inputs can be used to meet specific needs.
- Determine how much time can be allocated to attend courses without jeopardising the work of the enterprise.
- What types of courses would minimise disruption of the enterprise?
- Decide who amongst the available staff should attend training courses.
- Calculate the cost of obtaining the identified training and work out what can be afforded.
- Prepare a prioritised and fully costed schedule to implement the training programme for the enterprise.

IN CONCLUSION

Although the range of training needs topics will be very wide, with many of them common to all small and medium enterprises (SMEs), there may be some that are more specific to fisheries and food enterprises, e.g. food quality assurance and HACCP. Do fisheries associations or centres of excellence exist that could organise courses for the sector? If expertise is not available locally, do individuals or national organisations have linkages to other countries where such courses exist? This Symposium has been organised to address some of the key needs that have been identified so far. Without doubt a more extensive and equally valid list of the needs of enterprise managers could be developed.

Business Training Needs Analysis for Fisheries Managers in Romania

Chris Sealy¹, Management Education in Assisting Development, UK

ABSTRACT

This paper is based on work with the inland fisheries sector in Romania since 1995. The practical and theoretical challenges of assessing the needs of a proud group in the middle of fundamental change are presented. The approach, methodology and timing of the study were adjusted to accommodate these special conditions. The paper also presents the case for the flexible application of training needs analysis (TNA) principles in all situations to ensure the delivery of an accurate picture of training needs.

PRINCIPLES OF TRAINING NEEDS ANALYSIS

Training needs analysis (TNA) is a process whereby the existing skills, knowledge and attitudes of the target group are established, the desired skills, knowledge and attitudes are proposed and, finally, a strategy is proposed to bridge any gap which is discovered. Many occupations share a core of skills, knowledge and attitudes but nevertheless individual jobs do require particular specialised attributes. Even the core skills must be assessed in a TNA exercise, such as the one undertaken in Romania, as it was important to check the general level of business competence of the fisheries managers — together with their strengths and weaknesses — in the areas linked to the new tasks they were being asked to undertake.

BACKGROUND

The task set by the project in Romania was to conduct a TNA with managers in the sector to establish their business training needs. The particular challenge of the project with fisheries in Romania was posed by the psycho-sociological pre-disposition of the group, their lack of any knowledge or experience of the matter being investigated, and their geographical spread.

The management grades of the inland fisheries industry in Romania were staffed almost exclusively by graduates from the Fisheries Faculty at the University of Galati. These 'Fisheries Engineers' were technically competent and sure they had all the necessary skills and knowledge to produce fish. This confidence was based on an old system that was convinced it was possible to analyse any occupation and design a course which would impart all the knowledge needed to undertake the task. This system was highly knowledge-based and had little regard for competence or the concept of the intellectual and practical skills needed in any particular occupation.

Equally, the training was inflexible. Curricula tended to become fixed over time and the graduates themselves were not trained to be innovative but rather to be good followers of

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a pattern. In general, the psychological mind-set was one of almost complete pride in their own capacity. Therefore, to suggest that such people had training needs was tantamount to suggesting that the entire training system for Romanian fisheries was faulty.

This training had been meticulously designed. The faculty in Galati was full of extremely proud and confident people — highly distinguished and experienced scientists who had all the necessary knowledge to ensure their students were fully equipped. Therefore, fish engineers were trained in an academic institution with a conviction that it was the only place where fisheries managers could be trained. The industry was supplied with specialists by a specialist institution. Almost all involved were convinced that the system was working well at the time and would continue to do so.

The project team was mindful that the prevailing mood of the managers and other key actors in the training system pre-disposed them to be suspicious and insulted by a TNA exercise which examined basic business knowledge. What was needed was a rigorous and reliable technique that could be conducted in a non-threatening and quiet manner. Without being deceitful much of the data collecting would have to be implicit rather than explicit.

All the actors in the sector had little or no experience of the market economy itself and even less of managing a profit-focused organisation. Much of the business vocabulary was meaningless or worse: certain words had entered common usage without an accompanying general understanding of what they meant. An example would be 'marketing' which was commonly used. Many people said that they needed marketing training, however, to most of them, the word simply meant promotion or advertising rather than encompassing all its facets.

The practical situation was also challenging: there were approximately 300 fisheries managers looking after a similar number of enterprises throughout the country. Good practice demanded that a representative sample of the managers should be involved in the TNA process to ensure an accurate picture. Working with a representative sample was always going to be expensive and time-consuming. Fish farmers have more time to spend with others during the winter, at which time access to parts of rural Romania can be very difficult.

THE TNA PROCESS

Ongoing training is the norm in many enterprises in western Europe. Larger organisations will have systems in place to assess constantly the skills and knowledge of their staff and will design appropriate training interventions when necessary. They acknowledge standard circumstances which trigger a TNA process. Internally, TNAs may be triggered by new recruits, new structures and procedures, or new customers. Externally, changes in competitor activity or changes in legislation would also trigger a TNA. A training-orientated organisation recognises the value of training and workers recognise the personal benefits of the training being offered. The organisation is not questioning the value of its staff — rather the opposite — and the workers do not feel threatened by the suggestion that they need training.

The external triggers for TNA and training appeared obvious with the fisheries sector in Romania. The sector was moving with the rest of the economy from a command economy to a market-based system and the enterprises were scheduled to move in to

private ownership. In response, the NRI project team had arranged a series of training interventions through the Fisheries Faculty at Galati. For this purpose, the training need was assessed by looking at the changed circumstances and making some assumptions about the new skills and knowledge which would be required. The courses in project management and investment plan preparation were attended by general managers who were expected to implement the procedures in their own organisations while the faculty was expected to incorporate these courses in its undergraduate and postgraduate curricula. In the event, there was little evidence that either happened to an appreciable extent.

Before embarking on more training, the project team decided to make a more formal assessment of the training need and to complete the process by designing training interventions to satisfy the needs that were discovered.

From the response to the Galati courses and more anecdotal work with the managers in the sector, it appeared that the early courses probably assumed too much knowledge and were pitched at an inappropriate level both for the existing knowledge of the target group and their future needs. A methodology had to be found which could test this hypothesis without upsetting the respondents who might think their true calibre as fisheries professionals was being questioned.

TNA survey

The response to postal surveys is often poor and gives no opportunity to reassure the respondents concerning the positive intentions for the outcome. Structured surveys limit the responses and can miss important qualitative information. Instead of using a standard TNA survey, the training team prepared a semi-structured survey to establish the general picture of business training needs within the sector. The questionnaire was pilot-tested and about 10% of the target group were interviewed over a three-week period during the winter when managers were available. The survey was conducted in November and December 1995.

Almost without exception, those interviewed acknowledged that they needed business management training if they were to be successful as independent enterprises in a market economy. When asked about the particular skills they perceived would be needed in the new environment, the respondents were less able to reply with any degree of reliability. The problem here was a lack of exposure to market economics leaving them unable to define their needs. For example, many managers said that they needed training with marketing while suggesting that they felt comfortable with pricing, when pricing is a major component of marketing.

Basic business understanding was tested by asking respondents to explain the meaning of some fundamental terms. Respondents did not find this threatening as they were assured the whole purpose was to check the level of training that should be provided rather than some trick to indicate how poor their understanding was. Their basic business understanding was found to be quite seriously deficient.

The first survey indicated the need for basic training before fisheries managers would be able to express properly more sophisticated business training needs. This need for basic business training was not readily acknowledged by the respondents who believed they could show their basic knowledge by using all the correct terms.

Basic business training

At this point the project team decided to implement a basic training programme through a distance learning course that was especially prepared for the fisheries sector and therefore would attract the interest of the group. This was designed to give the target group the understanding and vocabulary they needed to take their first steps in market-based business and express further training needs. The course was important in conveying the value and acceptability of ongoing training for professionals. The design of the course is the subject of the next paper and will not therefore be described here. The course is administered by the British-Romanian Distance Learning Business Training Foundation (BROCAD) which was established during the life of the project.

TNA methods

Experience within the project suggests that once this very proud group experienced the value of continuing training and professional development, it would be possible to use more traditional TNA methods which question their existing knowledge and skills more directly.

Members of BROCAD staff who were involved with the early survey were subsequently trained to use TNA methods and analyse the results. Several of the enterprises undergoing privatisation have invited BROCAD to conduct a thorough TNA and prepare a training plan as part of their preparation for the future. Organisational methods are used to assess attitudes to training and other areas such as communications and team working. Individuals are encouraged to assess their own needs and devise methods that complete more objective assessments.

CONCLUSIONS

- During a period of extensive and fundamental change in any sector of the economy, it is valid to assume that the people in the sector will require training to adjust to their new situation. It is a mistake to design training interventions without a thorough investigation of the existing skills and knowledge of the group concerned and an assessment of what they will require for their new situation.
- If it is to be accurate, such an assessment must be conducted in a sensitive manner that allows for the psycho-social position of the respondents and encourages their co-operation.
- Many good TNA methods are available in the published literature but most are published for an organisational culture which accepts ongoing training as an investment in the human resource bases of an organisation and applies to people who accept the value of training in their personal career development.
- In the early stages it may be necessary to prepare special methods which are adapted to the culture and socio-psychological conditions of the target group.
- More traditional TNA methods must be carefully adapted for use in other cultures and be used alongside a sensitisation process which itself begins to change attitudes towards training and human resource development.

Basic Business Management Training in Fisheries by Distance Learning – the Romanian Experience

Angela Coman¹ and Cornel Mihai², BROCAD, Romania

ABSTRACT

This paper is based on work with the fisheries sector in Romania since 1993 and explains the need for basic business management training. Following a survey of a representative sample of sector managers, an urgent need was identified to upgrade the business skills of working professionals. The reasons for selecting distance learning as the mechanism to deliver business training are presented together with a description of the infrastructure established to deliver the courses. The course content is presented with the logistical details, how problems were overcome and the achievements.

INTRODUCTION

This paper presents the reasons which led us to choose the distance learning system to deliver business management training and how we organised the activities in order to prevent and overcome the anticipated problems. In 1993 the British Know How Fund (KHF) Fisheries Project initiated a range of activities to identify the possibilities of development in this sector including human resources and training to improve the skills of those who work directly in the fishing sector (technical and managerial know-how).

The results of a TNA survey (see the previous paper by Sealy), carried out in 1995 on a representative sample of about 10% from the total number of sector managers, revealed that 92% had no knowledge of elementary, commercial business. An urgent need was identified to update skills and capabilities of existing working professionals. There is also a need to provide undergraduates studying fisheries subjects with modules on business management but this is beyond the scope of the British-Romanian Distance Learning Business Training Foundation (BROCAD) work so far. The needs identified for fisheries sector managers related primarily to business training — current technical skill levels related to breeding and growing fish were not considered an urgent problem. Existing knowledge did not adequately equip them to deal with issues involved in privatisation and restructuring of their enterprises. As a consequence, the basis for a business training centre for the fisheries sector was set up in 1996. BROCAD is a registered, non-governmental, non-political and non-profit organisation, which is financed by sponsors and by students' fees.

WHY DISTANCE LEARNING?

During the survey carried out in 1995, training needs were identified that were related to the basic aspects of general management, marketing and financial management. Earlier attempts by the KHF Fisheries Project to present residential courses for sector managers of 2–4 weeks' duration were of limited success, largely because of the refusal of managers

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² Cornel Mihai is the Chief Executive of BROCAD and is a fisheries graduate with 20 years' experience, particularly with the Romanian deep-sea fleet.

to leave their jobs for more than a few days. As fisheries managers are 'scattered' in many different locations throughout the country, and are often based in remote, rural locations, residential courses were inappropriate, even at regional centres.

Distance learning was identified as an effective means of delivering the necessary training that would also be acceptable to working managers. It would allow them to work at their own pace and would not unduly disrupt their jobs or social activities. A network of course tutors was established so that the students could have access to and visits from their respective tutors, who were based in local regional centres. The tutors were recruited from established regional Business Development Centres and were given short teacher training courses on their roles for the BROCAD fisheries business management course. The tutors maintained contact with the students, provided advice and guidance, and marked written course assignments. To provide contact between the students and to facilitate group working, two weekend schools per course were organised. Special lectures were arranged and students worked in groups on case study discussions and presentations.

With these arrangements the first two courses were almost fully subscribed and the drop-out rate was about 15%, which was considered acceptable. The challenge this novel form and type of training presented to managers should not be underestimated. Last, but not the least, was the social impact distance learning has; when one of the family or business members is involved in a distance learning course, other members can also read the material and they can discuss the information and principles presented. In this way it can be considered that distance learning raises the awareness not only of the person directly involved in the training process, but also of the people coming in contact with them. BROCAD would obviously prefer that everybody who has access to the course material should pay a fee. The value of the tutor support and weekend schools will hopefully convince individuals that access to the course manuals alone is not sufficient.

COURSE CONTENT

The aim of BROCAD was to train managers and employees working in the fisheries sector in order to improve the efficiency and the effectiveness of the sector. It has already been mentioned that business knowledge was not well developed. Therefore, the content of the courses was designed to be appropriate for fish farm managers, using case studies based on their activities. A summary of the courses is available together with details about purchasing the course.

- The **management module** relates to:
 - efficiency and effectiveness in the managerial activity
 - human resources management
 - organisational structure
 - organisational culture
 - management of change.
- The **marketing module** presents basic knowledge about marketing, such as:
 - customer behaviour
 - share of the market
 - research methods used in marketing
 - promotion of products
 - influences that the external environment have on the organisation
 - marketing plan.

- The **financial management module** treats aspects related to:
 - relationship between the financial activity and the manager
 - costing activity and the role of costs in the decision process
 - financial analysis for those interested by the course.

LOGISTICAL DETAILS

It is normal to ask yourself what you need to have or to do, in order to ensure the quality of the service you intend to deliver. First of all, having decided to establish distance learning training, we designed the network of regional centres where tutorials would be held. They were organised in seven regional centres in the areas where students were recruited. We were fortunate to find existing Management Development Centres with experienced staff, who only needed training for distance learning teaching. It is important to say that part of the success with this kind of training depends on the quality of the tutors. The rest is in line with individual interest and the attention each trainee pays to training.

From our perspective, the main actor in this is the trainee: trainees need special attention, starting with the registration process and ending with issuing the certificate. When registering, the trainees have to fill in special forms and make contracts that ensure the confidentiality of their results and guarantee that the course fees have been paid by them or by their organisation. It is important to ask for a monetary contribution in order to make them feel that training has a value; to develop a sustainable future, BROCAD must also charge fees that will cover all operational and course costs.

OVERCOMING PROBLEMS

One of the major problems encountered was the involvement of the trainees in the training process. We come from a country where, ten years ago, the graduation certificate from any faculty was the guarantee that you could perform a specific job. This knowledge obtained while studying in a faculty — the only one provided for a fish engineer, for instance — and the experience gained during 10–15 years in the workplace were considered to be enough for an engineer to be a manager. With the first team of trainees we had to work hard to overcome the resistance towards a second input of training; it was not so hard with the second team. The fisheries sector is relatively small and positive feedback from the first group encouraged other managers to register for subsequent courses.

Other problems were related to the financial constraints; there were people who were willing to study but they did not have the money to pay for the course, so we lobbied the managers of their societies to support them in their training. In contrast, some societies registered a group of their managers, even if only a few were really interested in the course. Feedback from the Romanian and British consultants who were working in the restructuring process with managers who were trained by us was very good. In fact they felt that there was an obvious difference between the people who participated in the course and those who were not involved in the training process.

ACHIEVEMENTS

In the two and a half years since the courses started, we have trained over 45% of the managers in the fisheries sector. The achievements of the programme could be measured in terms of the changes induced within organisations after training their staff, and that

other trainees were sent in the second and third teams by the organisations that had trainees in the first team.

It can be stated with confidence that managers who have completed the course are much better equipped to understand the issues involved in enterprise restructuring and the operation of enterprises as commercial businesses, and have an increased ability to formulate realistic plans for future development. The BROCAD course provides an important basic entry qualification for individuals who may wish to go on to more advanced qualifications, such as an MBA. Although people in Romania have access to advanced business courses through a range of national and international providers, basic courses are much more difficult to find.

Current Situation in the Lithuanian Fisheries Sector

Algirdas Gedrimas¹, Fisheries Department, Ministry of Agriculture, Lithuania

ABSTRACT

We are convinced that our efforts aimed at transforming our national economy, including the fisheries sector, can be successful only if they are integrated into the international trade system. Several free-trade agreements have been signed with a view to reducing trade barriers; other free-trade agreements are being negotiated. An indication of the country's stabilisation is that the rate of inflation averages about 5–6%. Over the last three years ownership of property in general has changed, as has the whole framework of industries, for example, all fishing companies, and 60% of fish processing and 90% of the aquaculture sectors are now privately owned. This provides some evidence of the stabilisation and growth of the national output of fish products, and the growth of import and export operations.

INTRODUCTION

Fishing vessels operating in the Baltic Sea and most of the former state-owned fish processing industries are aware of the fundamental need for modernisation, as well as the necessity to make improvements to upgrade production equipment and sanitary conditions, to be competitive in the free market.

The harmonisation of legislation to conform to EU and FAO standards must be implemented in the export industries during the next two years. In order to do this, the fishing and fish processing sector urgently need financial assistance and support in reconstructing the processing industry, purchasing equipment, fishing vessels etc.

➤ Some facts and figures:

- 12 large trawlers operate in the high seas (catch is about 25 000 tonnes)
- 64 fishing vessels operate in the Baltic Sea waters — this does not include small coastal boats operating in coastal areas and Curonian Lagoon (total catch in 1997 was about 17 000 tonnes)
- 20 large fish farms and some small ones are farming carp (70% common carp, 30% mirror carp) in 10 000 ha. In addition, fish breeding and restocking of natural waters is being developed; trout, white fish, pike-perch, pike, goldfish and other species of fish and crayfish are used for stocking freshwater basins and lakes.
- 115 fish processing industries operate on the Lithuanian market, some export canned fish, crab sticks, and salted and smoked products.

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RESEARCH

The Department of Fisheries of the Ministry of Agriculture is responsible for fisheries development in Lithuania. The fisheries research laboratory in Klaipėda carries out research on fish from the Baltic Sea. The Institute of Ecology, Vilnius, and Klaipėda University are also involved in marine fisheries research, and do research on fish from Curonian Lagoon and inland waters. For more than 30 years, the laboratory of pisciculture in Vilnius has been involved in hydrochemical, hydrobiological, biochemical and ichthyopathological research and broadening of biotechnological control in inland waters and ponds.

ECONOMIC PROBLEMS

- Restocking of natural inland waters is still financed from the state budget in six farms. Approximately 30% of fish farms (of carp and other species) are experiencing financial difficulties.
- Fishing in the Baltic Sea suffers from the high price of fuel for vessels, this problem must be solved as soon as possible in order to be competitive in the market.
- Lack of well-organised fish markets (auction) and proper infrastructure in Klaipėda Port are the main reasons that only 50% of Lithuanian quotas for last year were utilised.
- Fish processing industries have major problems both with the lack of working capital and with the extremely slow modernisation of processing equipment and facilities; these may be the main reasons for the failure and bankruptcy of some of them.

THE FUTURE: A PERSONAL VIEW

From the ideas expressed in reports from others countries, in particular the paper in Session 1 by Váradi and colleagues from Hungary, I would like to agree with this idea of solving the problem of rural development through the development of fisheries on lakes, rivers and ponds — especially in those areas where agriculture development is impossible and non-profitable. The introduction of anglers' societies, water sports, recreational fishing, and the development of resorts etc. would be reasonable and would present new challenges and support to these areas.

Consumption of fish and fish products per capita in 1997 was 11.5 kg: in 1995 it was 8 kg. The main problem in this hard transitional period is the education and training of managers working in fisheries enterprises and departments; there is also a problem in the training of top level managers. Changes in the philosophy of moving from a central (state) economy to market economy is on the agenda and, in my opinion, this is a crucial problem facing free market economies in developing countries. I fully agree with John Rogers (see the first paper in this Session), that they are the main problems to achieving success in business.

Business Training for a Fisheries Sector in Transition (with particular reference to Romania)

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ABSTRACT

This paper, based on work with the inland fisheries sector in Romania since 1995, explains the generic and peculiar business environment of a natural resource sector undergoing radical structural change from a centrally planned to a market-based economy. Enterprise managers who are working in a transition economy need specific skills and knowledge to meet the challenge of that environment. The specific demands of the business environment in Romania are illustrated through examples to show how training must be tailored to the needs of a particular target group rather than simply repackaging a standard business training package.

THE IDENTIFIED NEED

Fisheries enterprises were acutely aware of their role in a centrally planned economy. Fish provides a protein source and managers were assigned production targets linked to national targets for protein supply. In many ways, the centrally planned world was a very simple place for them to work. They were trained to produce fish. They knew the inputs and resources needed to meet their production targets, they requisitioned what was required, put it all to work and then reported the output at the appropriate time. Loan finance could be requisitioned in a similar way to inputs. Loans needed no collateral as they were secured by the centrally issued production order.

Market-based economies are much more complicated environments: they are filled with multiple variables and personal choice. Fish enterprise managers, like so many across the economy, faced a totally new situation when the transition to the market began. Almost overnight, managers were expected to decide how much to produce and when, on the basis of profitability. Managers were used to making technical and political decisions but economic judgements had been the domain of others. The multiplicity of factors which govern profitability are rarely stable in a transition economy. For this reason alone, simple mechanistic approaches to business management that had been used by trainers in the developing world were not helpful. The mechanistic approach suggests that the market price of particular goods and the costs of production, marketing and sales are predictable, while the most obvious characteristic of a transition economy is its unpredictability. In addition, a mechanistic approach did not fit with a highly educated cadre of managers. They were insulted by anything that looked simplistic and, in any case, they needed a more complete approach based on conceptual understanding, which they could then interpret individually and adjust as circumstances changed.

To survive and prosper in their new and constantly changing situation, fish enterprise managers needed a full, business management tool-kit, appropriate to the size and

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nature of their businesses. The theory had to fit their situation. Fisheries enterprises in Romania are small- or medium-sized businesses so the managers did not need an MBA but they did need rapidly to acquire business skills together with enough theory to modify their practices as the environment changed. Training which is appropriate for the small and medium enterprises (SMEs) sector in a stable and mature market economy was not found to be appropriate for similar businesses in an economy in transition.

A critical examination of what had gone before suggested that a new approach was necessary. Institutions that simply wanted to repackage their existing training products in a different language may well have been guilty of short-changing their new clients. Economies in transition place particular demands on managers. Training courses have to be specially written or extensively adapted to provide the flexible skills needed; case studies must also be appropriate. For example, citing Coca Cola, which was moving from a fictional experience in movies and videos to the reality of the market, as a business case study for a fisheries manager in Romania in the early 1990s is unsuitable — it is too far removed from his day-to-day experience.

Many imported courses make unrealistic assumptions about the knowledge these new economic actors have of the way a market economy works. If you grow up in a market economy you are introduced to the market at a very early age, first as a customer and often later as a supplier of labour and even goods and services. After 40 years of central planning, many of the fisheries managers knew little about the way the market functions practically and almost nothing of market economics.

For the first time, training would be offered to address the assessed need and it was important that the training itself carried the new market ethos. Therefore, the training had to be offered at a time and a place that made it accessible to the target group. The experience of the British-Romanian Distance Learning Business Training Foundation (BROCAD) in delivering training through distance learning has already been described (see the earlier paper in this Session by Coman and Mihai), so further details are unnecessary.

THE FISHERIES MANAGER'S TOOL-KIT

The assessment briefly described above indicated the need for a course which was predominately practical but with enough theory to allow flexibility; it assumed little but did not insult, and used examples which were meaningful. The practical nature is reflected in the use of the term 'management tools', which would be understood by a very practical group of people. After needs assessment, a balanced tool-kit had to be assembled.

Tools were chosen to satisfy the client's immediate needs for business survival. According to the professional judgement of the trainers, they were also guided to others that they would require when the economy began to stabilise. Privatisation was on the declared political agenda and in the terms of reference for many projects. Some of the early business training courses consequently focused on investment planning and other tools important to the privatisation process. However, the managers were, and continue to be, more concerned with keeping the business going to maintain their own employment and jobs for their workers.

The short-term view of the managers was at times problematic, as it was difficult to interest them in any training, which had no obvious and immediate return to them in the

form of an increased ability to cope with current difficulties. The ability to cope was much more important than making a profit, which was a new concept, and only immediately relevant to the few enterprises that were pressing towards privatisation very early on.

At times, trainees were more interested in accessing information than acquiring skills — even skills that would allow them to access data. The target group was accustomed to a position of dependency and they had to be educated away from viewing the training organisation as a replacement for direction from the centre. Manager attributes such as responsibility, self-dependence and judgement had to be included in the training curriculum.

SPECIAL TOOLS FOR SPECIFIC NEEDS

Financial information

Production and general managers were in the majority but many of the larger societies had a complete raft of professionals and specialists to run the operation. Financial reporting was often in the hands of 'economists' who needed new and appropriate skills. Very approximately the role of the economist would equate to that of finance director and Romanian accountants are bookkeepers. Romanian accounting was, and in many ways continues to be, geared to tax collection and fiscal reporting. For this reason, company economists and the information they produced tended to serve the Government more than the companies who employed them.

Financial managers needed to learn the structure and use of management accounts and to keep them in parallel to their fiscal accounts or produce management information from their existing systems. Production and general managers did not have the knowledge to demand the information they needed — or the skills to interpret it — so they too had to learn management accounting. Managers needed various accounts that were not available in the old accounting system such as a profit and loss account, trial balance and balance sheet.

Budgeting and cash flow management

The most frequent cause of small and medium business failure around the globe is a failure to manage cash flow, leading to insufficient liquidity to maintain business activity. Many profitable businesses fail because there is no available cash to purchase the next supply of inputs.

Pisciculture has, like most agricultural enterprise, a seasonal cycle of high consumption and a relatively short period of income flows. In Romania, cultural and technical peculiarities exacerbate these problems of seasonality. Fish consumption is associated with religious festivals and one particular celebration accounts for a large percentage of total annual sales.

Our managers were accustomed to buying inputs on almost limitless credit or through loans from compliant banks. They had no need and drew little gain from pursuing debts for fish sold to other state companies on similarly limitless credit. Cash flow entered their lexicon very rapidly when credit lines from suppliers and banks alike dried up completely or were severely restricted. Budgeting and cash flow planning were vital tools for immediate survival and longer-term viability.

The financial affairs of many of the societies were centralised at company headquarters. The budget for all the farms, processing units, and wholesale and retail units was lumped together. During this part of the training, managers were made aware of the logic of assigning responsibilities for sections of the budget to the managers of particular units. This illustrates the need for training to be running in parallel with organisational change. Organisational change is a common indicator of the need for training and, equally, training in the absence of the associated organisational change will be theoretical and lose much of its importance to the trainee.

Organisational planning

Business training was just one component of a project with the objective to privatise the fisheries sector. Ensuring the training fitted the context was a key issue at all times during the project. When the managers started, they knew only the existing vertically integrated structures and often they proposed solutions to problems based on this structure. For example, if they were unable to sell all their production or processed product, their solution would be to open a retail outlet that would be forced to take their product.

The training programme had first to explain that in a market economy the linkages are based on one party satisfying the perceived needs of the other. After this, the programme was geared to sensitise the participants concerning alternative organisational arrangements; and it had to impart the necessary skills to choose or understand the appropriate structure for the new situation, firstly at company level and then within the company in terms of management structures for individual units. Another part of the project was tasked to analyse the companies and suggest appropriate new structures. The training unit had to ensure the managers understood what was being suggested.

The strategy was sound but legislative difficulties slowed the work on restructuring and privatisation, and this led to a lack of practical experience of what was being introduced in the training sessions.

Costing and pricing

Managers need to know what their costs are but this information was not available to the people in charge of the businesses we were dealing with. Many of the fisheries societies were vertically integrated organisations consisting of several business units but the society accounts could not easily reveal information about the performance of these units. Managers could be trained to run management accounts but this would not solve their immediate problems. Many of the businesses had financial difficulties and managers needed to access information about costs. Managers needed the tools to disaggregate the information in their existing accounts and then evaluate it. This highly specific skill would be needed for a relatively short period until they could begin to maintain accounts which would give them the information they needed on a regular basis.

Business planning

To a large degree, the fisheries enterprise managers were lost in a sea without navigational aids. Under previous arrangements, their performance was judged against the production targets set and they could judge their own performance in similar manner. Business plans were being talked about but from the perspective of preparing for privatisation. Investors would need to see figures which proved the viability of the business and confirmed that they would receive a return on their capital. The business

plan was not perceived as an aid to the ongoing work of the company but more usually one of the hoops that would have to be jumped through on the route to private ownership.

The use of business plans as a management tool for planning and monitoring the performance of the enterprise was barely understood; subsequent use was threatened by the narrow understanding forced through the present focus on preparing the enterprises for sale.

IN CONCLUSION

- Transition economies present a particular challenge to enterprise managers: fisheries managers face the triple challenge of the transition environment, the nature of their training and the vagaries of natural resource production.
- Business is business anywhere in the world and in every sector but the transition environment and the other challenges require specific skills and knowledge. Moreover, the backgrounds of the managers, together with the environment, demand a tailored content and specific approach to training. A simple repackaging of a standard business course would not give the required result.
- The fisheries managers deserve and need a course tailored to their requirements: it should provide all the basic business skills together with the specific tools and knowledge that they need to deal with their immediate problems.

DISCUSSION

Jerry Domaniewski (Independent aquaculture specialist, UK). You have very clearly had a good distance learning arrangement and, in the circumstances, that is the only way to progress, given the large distances between farms, but you have also highlighted — and I would like to stress this — the value of the residential component. This is particularly important in such a dispersed sector as fisheries. It is of considerable benefit to the managers and people working in the rural fisheries — and it would apply to all fisheries in any country because of their dispersal — to meet colleagues. The mere act of coming together, having a few days away from the farm, talking to people with similar problems — it does not matter what the excuse is — is very beneficial. They may connect works, they disseminate knowledge, as you said these are experienced people, each of them has a lot of experience. What they are often lacking now is motivation and enthusiasm. They are perhaps depressed, things are not going well and by coming together and meeting people like yourselves and learning new laws, and new language, is of great benefit to them I feel. It is not a question really it is just a comment but I think you are doing a really good job.

Angela Coman (BROCAD, Romania). Yes, they were residential schools organised at weekends and in very nice places in Romania, in the mountains for instance.

László Váradi (HAKI, Hungary). We have heard of very good examples and good experiences in training in fisheries. In my opinion, training should be a complex activity including distance learning, all kinds of meetings, pamphlets and so on. Hungary is a small country and we have not even thought about distance learning programmes. I wish we had it, not only because of the scattered locations of the farms but there are many other advantages as have been pointed out. We have other ways of improving our management skill, for example through regular meetings. We have a meeting in June, which we have had for 24 years, and another annual meeting in early December — a very busy period in fish farming. I think that meetings such as we have here are also a great contribution to the improvement of management skills and knowledge; more effort is needed to have further meetings and training programmes and gatherings. I would like to know your opinion on how we can find more funds for these through the EU. The UK Know How Fund is a very good example in Romania but some other countries may need more training. Bulgaria received some FAO assistance, I think that during this meeting we may have some conclusion or proposals for getting funds for such training programmes.

Angela Coman. I think we can start working for a proposal together with anybody interested.

John Rogers (Symposium Convenor, NRI). Can I just come in for a moment regarding the work that has been done in Romania? The BROCAD course has been a major activity. BROCAD has been established as an independent education foundation, with the hope that it will survive long after the project has gone, and it charges fees etc. so that it can earn its own revenues. As regards general dissemination of information, I agree. This is an absolutely key issue; a regular quarterly fisheries journal is circulated around all the managers in the sector. This gives views from within Romania, information from outside and new developments — it is a forum for discussion. It is beginning to develop with letters from Romanian specialists stating their views on a particular issue and then there is an exchange in following editions. We have also, as part of this, included a number of technical consultancy reports, both by Romanian consultants and overseas consultants, which have been published and circulated to the sector — studies on marketing for example. I believe strongly that it is absolutely crucial to get as much information as possible circulated and made available to the sector at large.

Ian Goulding (Megapesca, Portugal). I think that everybody is aware that to bring about changes within organisations in the transition economies requires, first and foremost, the leadership and commitment of the chief executive of the company. There is no point in the people lower down in the management chain wanting to change things, but having resistance at a senior level obviously does not work. I was wondering how effective the distance learning approach was in recruiting and targeting senior managers and chief executives and bringing about the required change in the attitudes and approach that is necessary?

Angela Coman. We succeeded in both recruiting students and providing training; the drop-out rate was acceptable. We have trained around 70% of the managers in the fisheries sector. There were many more fish farmers than society managers on our course.

John Rogers. Can I come in with a further comment? Angela mentioned that in the very first course BROCAD had recruited mainly the younger managers, five or a maximum of 10 years out of university. Subsequent courses have attracted quite a number of the older, mature managers — one or two have surprised everybody by being the best students. But what it has done is that the managers that have completed the course have gone back to their societies and have been much more effective in persuading their general managers that a change of attitude is necessary. In one case nine farm managers got together, worked out a strategy and confronted their senior management and, in fact, their views to a large extent prevailed and the general manager was forced on a course that he had not anticipated. So it does influence things and certainly the managers that have completed the course are much more able to consider business plans and what is practical and possible for the future. This I think is increasingly valued within Romania.

Bent Larsen (EASTFISH) — Question to Chris Sealy. He very rightly pointed out that a business plan is not just to be used for banks and for other interested financing parties, it is definitely a book which should be followed by the managers and be used to monitor properly against set targets.

Yesterday, the focus was on financing which is why I did not comment on the other aspects of the business plan but I have a question relating to your experience in Romania. In fish farming, in your management tool-kit you talk about what you would have as a monitoring tool. What would you consider the most important parameter to monitor? Would it be the use of feed or is it on the technical aspects of the operation, or is it on, let's say, the financial management of the operation, or would you include both?

Chris Sealy (MEAD, UK). I would certainly include both. I think that the experience there says that everybody is used to monitoring the technical side. In a way you do not need to encourage people to do that, and it is the costing side that they need to pay much more attention to because it is unknown to most of those enterprise managers. They have never really had to deal with that. They have had to find the money to pay for something but have never had to apply that knowledge of "well I needed that money to pay that, to come up with the cost of a particular kilo of product or whatever". In the toolbox you need to give them, and you need to emphasise, the financial management of their organisation.

Chairman — Question again to Chris Sealy. You mention that there is an ongoing need for appropriate examples for business development problems that are relevant to this sort of meeting and you have management case histories from Romania. Is this the sort of meeting that could provide useful cross-fertilising examples that could be used for training in other fora? Are you making use of the participants that we have here to help you with examples that are relevant in other countries?

Chris Sealy. A forum such as this gives you examples, to a degree. Very often though, in an international forum like this you do not have, even here, the scale of enterprise represented which is the common scale in the countries that we are looking at. We have representatives here of quite large enterprises — most of the enterprises are much smaller and we need examples from them. The limitation that we have of case studies out of Romania is that the slowness of privatisation has meant that the number of case studies is very small. We would need to collect more case studies from elsewhere to make a really good picture of what is going on. Like all things, it would be useful to compile such a series of case studies of the right scale, or range of organisations, as a book.

I have been involved outside fisheries in another project in Romania where we have actually produced case studies for very small enterprises, including single person enterprises. As far as I am aware it is a unique document that contains about 10 case studies of a small transport company, a small construction company etc. — we need more so you can make training relevant.

John Dallimore (J.D. and Associates, Germany) — Question to Chris Sealy. We have talked about business plans and about marketing plans. I am really interested to know how you feel and what

your experiences are in Romania in developing such management plans. Are your courses mainly on a one-off basis? In other words the managers are, I believe, trained for two days, there are weekend courses that you are running, and is it then the target of your programme to review and see these people in maybe three or four months? Are you using the goal-setting techniques and things like this and then monitoring their performance so that they have some way of develop their own performance as well as their business performance?

Chris Sealy. The distance learning course spans several months; people are supposed to put in about five hours a week over several months and during that period they will meet twice for weekend courses. Our problem is that we are not financed to give post-training support. We would encourage our trainees to monitor the performance of their own company. The course contains an encouragement and the tools to do that, but we are not financed to go in and monitor them and see how they are doing. In terms of their further training needs, they are encouraged to come back to BROCAD and make statements to BROCAD and to declare to BROCAD what their future training needs are. They are also encouraged to see the value of training and to realise that they will have to pay for this training themselves in the future. This point came up with László again, yes we need international finance to train people more, but they also have to know the value of training and be prepared to pay for it, if it is going to be sustainable.

So there are three answers to what I think was three questions. The first one was the period of the actual training that goes on. Secondly, monitoring the effect of that training: monitoring the actual progress against a business plan is up to the manager. We have conducted an impact analysis of the training and Angela has reported that we have seen changes. Finally, further training: they have got to be prepared to pay for it I believe, otherwise, there simply is not the money around to go on tapping into national sources.

Ian Goulding. My own company (Megapesca) was involved with a project in Latvia, supported by the PHARE programme, called Technical Assistance for Development of Private Fisheries, the main objective of which was to assist newly privatised fishing and fish processing. Companies through their initial steps in the market economy, and as part of this project, we also went down this road of developing and implementing management training programmes. I have to agree one hundred percent with Chris's observations, and can say that in my experience the comments that you made about the requirements for management education in the fisheries sector in the CEECs apply equally in Latvia as they do in Romania.

It struck me that there is a need for more communication of these various initiatives which are taking place, not just in these two examples but, I am sure, in other countries as well, where people are either independently, or with the support of development agencies and consultants, beginning to develop and implement training programmes. Training material is being developed separately and independently in different countries and I think there is a lot of scope to develop a forum in which these materials, and experiences, can be shared.

Mention has already been made of the case histories and in our project we developed some case materials. I would be quite happy to put these up as an initial starting point if we are going to develop a book of case studies for the fisheries sector in central and Eastern Europe. But perhaps more could also be done in terms of disseminating the distance learning materials, for example, and seeing if they could be somehow transferred and made available for use in other countries. I do not know whether EASTFISH would be able to participate in some sort of co-ordinating role in this area. It would seem that this organisation is one that does have the regional spread and contacts to be able to contribute. I do not know if anyone would like to comment on that?

Bent Larson. Thank you for your comment. EASTFISH is very happy to take on such a role trying to co-ordinate training but, as you well know, we have an obligation to make sure that our training packages are disseminated to our 19 member countries where, of course, each has their own language — some even have their own alphabet. That means that we may have to do it in a regional or sub-regional way, rather than trying to say that we can lump each and everybody into one course. I totally agree that the training in the practical aspects of business management is extremely important. And if we are in the situation where managers have been able to attract external investors, they may have some source of inspiration which might act as a sort of in-house training for them. Although, as we have heard here, that does not replace formal training or

distance training courses. I think that down-to-earth training is very important and EASTFISH would be happy to act as a co-ordinator of activities and we would also be very happy to have the opinion here from this floor on what are the needs as seen by our member nations.

Chairman. Ladies and Gentlemen. Do we have any further views from people who would like to express a need on behalf of their country for further training? Or the issue brought up by Ian Goulding on the possibility of putting together some sort of book or compendium of case histories which can then be adapted and used in training courses elsewhere round the region?

László Váradi. We have not made any training needs assessment — TNA is a new term for me — but we are in close relationship with many of the Hungarian farmers and two of them are sitting here. They may have also their own opinion of what kind of training they need. I think that all those aspects that have been discussed here would be very interesting for the farmers. This seems to be a general statement but there are very few specific courses on business management and those farmers who would like to do better, try to get information and try to attend courses or to go to conferences, but they need training. Information and training are two different things but it is difficult to make a systematic approach when we want to train these new farmers.

They get a lot of information support on these people and they cannot process the information. They need training on how to use the information for their own interests and I think that the experiences of this distant learning programme in Romania would be very useful to many other countries. I do not know how the international scope of that activity can be broadened but I think that would be very good.

We organised a Marketing and Business Management Symposium in Hungary with EASTFISH and we are going to organise local small symposia on these aspects — one is organised for this December. We really need the assistance of foreign experts. We feel that they need more information on modern methodologies in business management but, of course, there are a lot of specific needs in every country. If a book is distributed, that may be not the whole solution of the problem just a part of it. From the Hungarian side we are very much interested in the written material which is available but that should only be a part of the whole programme we would like to run in Hungary to train people in business management.

Bent Larson. Thank you very much for your introduction to these forthcoming events where EASTFISH, of course, would be happy to participate. As stated earlier, we would be happy also to act as co-ordinators within business management training when it comes down to the practical training. Obviously accounting and financial management are topics that we need to have but efficient business management is really 'how do you manage your resources the best way possible?' That would be a human resources input into your operation. There is so much money in the right management of feed, if you are talking about agriculture. Spending feed the right way might make a very good bottom line. So practical training on how to do that type of management is also important.

Finally on Ian Goulding's proposal on the compendium. I think we need to discuss it between ourselves at EASTFISH first. How do we go about this in a practical way? We need cases. Basically, at this stage, as we have no cases available, I would suggest to the floor again, and to our National Liaison Officers, to urge the industry to come forward with cases. We will help them provide a structure in which these should be presented and then maybe we could take it from there. However, first of all, we need an internal discussion in EASTFISH because making a compendium of this nature is time-consuming and it is also costly because of our language problems — we may be able to do it only in English and Russian for example.

Chairman. Thank you for that offer. I think the ball is now back with participants to come up with their suggestions and feed these through to EASTFISH.

Aina Afanasjeva (Latvian National Board of Fisheries). First of all I would like to thank Megapesca and, particularly, Ian Goulding for their assistance to the Latvian fisheries sector. I would like to add that Megapesca continues to help not only the fisheries sector but also the food sector to implement the HACCP system in the food industry, and fish processing enterprises are very interested in such practical help. In the future we are looking for implementation of HACCP pilot demonstration project in the fisheries field in three selected enterprises. I hope it could be

implemented, maybe next year, and we are looking for establishment of an education centre in the agriculture sector. After the implementation of the technical assistance project we would like to establish an education centre as an independent institution in Latvia, maybe in the Baltic Region, not only in Latvia, which could continue work in our region.

Malkhaz Khurtsilava (Department of Fisheries, Georgia). In Georgia this year we have launched courses for capacity building for the agricultural sector: it may also be possible to make a place for fisheries. They will be preparing two types of one-year practice courses. It is necessary to prepare courses for two types of consultants: for so called 'elite consultants', local consultants who will be learning the strategy for all sorts of agricultural industries; and for the consultant who will work directly with farmers. In that case, maybe we can also think about how to make more fisheries capacity building courses.

John Rogers. Ladies and Gentlemen. This morning's discussion has been very interesting and has raised a number of issues. Obviously the Distance Learning Course that BROCAD has developed has caught the interest of quite a number of people. The call for a compendium of case studies to share experience so that other people can, hopefully, learn from the experiences of other people in the past is equally of interest. I hope before long that we can circulate a questionnaire asking for your opinion, comments, suggestions, proposals for future action for each of the sections of the Symposium and also more generally for the overall meeting. I think what is of particular importance coming out of this morning's session is: "Is there a wish from the participants from this meeting that the distance learning management courses or other types of courses should be made available throughout the region, or for your individual countries?" When you fill in the questionnaires, would you indicate some of these views: this could lead to recommendations as outputs from this Symposium and to seek further assistance to try and achieve this.

Chairman. Any further comments?

László Váradi. I have just had a discussion with two leading farmers from Hungary on how they see this problem and what their needs are as far as training is concerned. They and also the representative of the one of the agricultural universities feel that training is rather a question of extension and we have an extension system in Hungary. It is not very advanced in agriculture and fisheries but generally in agriculture it works. And should such basic training in business management, marketing etc. be a part of that national extension programme. We can, of course, use the experiences from other countries and we can exchange our information on distance learning but this is basically extension. They need more information from international communities on how we can be competitive when we shall be part of the EU, on quotas, environment, competition with other users of the environment, house management, etc. We are ready to elaborate a little more of our opinion and we are ready to add some more questions to that comment if you do not mind.

Yordan Staykov (Thracian University, Bulgaria). We do not discuss the training of trainers and I would like to ask, who will train these trainers? This is a good training class of work? Of course, there are many courses in different countries but in the first week we have to ask this question.

I would like to tell you something of our experience at Thracian University. We started in 1990 when the people did not know the word 'marketing' — they think it is the selling of products — or the word 'management'. In the first instance we organised the training of our staff as professors at the universities. We invited many lecturers and professors from different parts of the world and we asked them to train us in economics, management and marketing of production and after that we organised our extension service. The US organisation, the PHARE Programme, helped to develop demonstration farms. With them we organised a national advisory system through the Ministry of Agriculture and we now have 29 Local Advisory Offices connected with the National Information System. This is through the PHARE Programme and now it is easy to help the farmers, but I would like to say that we have good staff training according to internationally accepted standards.

The second question I want to put to this meeting, but we do not put the question for the environmental friendly technologies, now we want to teach the people to produce and that should help them to learn more. It is like producing Coca Cola in the USA but Americans do not like

Coca Cola and this is the main question for sorts of economics in parts of agriculture. I think that in this transition period we have to train the people in marketing and management but we must not forget the environment and the role of fish farming.

Chris Sealy. I would like to make just one comment in terms of training of trainers. I think that can be a major role for the international community because you can see a multiplier effect there, or the donor can see a multiplier effect. You train the trainers, which is a smaller-scale activity and then rely on those trainers to go out and actually train the farmers or run the extension services to the farmers. So it may be that that is the area where you can look for international assistance and, from what you have said, you already have had quite a lot of assistance in that area of training of trainers.

John Rogers. The mention of the training that Chris and I have been involved with in Romania has only featured the business management side of it. To broaden the picture I should explain that BROCAD is actively looking at bringing in other training. One of the other subjects that we will get onto later today is quality assurance and quality control — this is equally a need for many managers. From my point of view it is a difficult problem because quality assurance and HACCP applies to the whole food industry, fish is simply one food commodity. If any such courses are to be developed, then BROCAD, working in collaboration with the University in Galati, would probably target them much more broadly. Similarly the business training has been put together for fisheries, but it is essentially a small enterprise training course. The examples are fisheries related more to meet the experience of the managers that we were targeting. However, the courses can be taken forward in many different ways. Training trainers was mentioned. Part of the work of the distance learning experience that we have had has been working with tutors from business development centres throughout the country. These are all part of that extension service.

John Dallimore. With respect to people training trainers in specialised areas, maybe the gentleman from Bulgaria can answer my question. How many people does he have that would be of a significant technical level to be able to receive training, say in environmental issues? When you start getting onto specific issues then you do need people who have the relevant level of expertise in the scientific training before they can then be trained to train other people?

Yordan Staykov. I will try to answer this question. I want to mention that at the same time as training, when we are training the people to produce, we have to bear in mind the internationally accepted standards for environmentally friendly technologies. For example, I will tell you about Bulgarian production and maybe it is the same in neighbouring countries. In these countries we are thinking that we may produce extensive production or sell intensive or put three, four or five kilos per kilo meat received from fish. You know that maybe in Denmark it is possible to use feed conversion ratio more than 1:1, or to less than 1. This is environmentally friendly feed and what is the situation in Bulgaria. When we started transition changes, this year I distributed more than 300 tonnes of feed for carp. Feed conversion ration is 2 and until this moment we have only 3, 4 or 5 it depends on the feed. It means that environmentally friendly technologies do not need such highly qualified specialists. We have to know the international standards accepted in this field.

Jerry Domaniewski. Possibly a slight digression, but I think to compare standards for feeding carp is completely wrong. It is not relevant to compare that for environmental impact standards, which are to do with trout farming. It is the effluent from the carp pond, which is going into rivers that has to meet the environmentally friendly standards. I would suggest that a lot of the systems which you are practising in carp farming in large ponds in central/Eastern Europe are very environmentally friendly and in fact should be considered as means of meeting environmental standards.

The trout farming system in Denmark, which has been explained before, often has several trout farms in one river; they may be polluting each other's water supply and may also be polluting water that is to become drinking water supply. That is a very specific situation but, correct me if I am wrong, it is a different situation from the Hungarian experience and other places where carp farms on the whole are often improving water quality.

Bent Larson. I am also a Dane and would like to come in on the last issue of trout farming in Denmark. As you know I am not a biologist but I have been working with trout farming from the

financial and economic point of view. It is true that water in Denmark is being recycled or used up to five or six times in each farm before it is let out. However the way of controlling the production system is by allowing a certain amount of feed to each farm and then I think I should add a small correction. It is forbidden to use surface water for drinking water, so pollution might be through the groundwater through seepage down to the groundwater level. I do not think it is really a major problem. The problems, which we have seen, have been related to what you call the 'death of the sea-bed' at the end of our streams. We are so small we do not have rivers, we only have streams, so when you come to the sea you get no oxygen level in the water. That is caused by pollution from agriculture by extensive use of fertilisers. Aside from that, I would agree to your points of view on carp farming. That it is the same notion that I have made in my work around the world that they are in fact quite environmentally friendly.

As to the economic point of feeding. When we travel around and see trout fish farms, we sometimes get conversion ratios of 1.2–1.5 whereas in efficient economies it is 0.8. Now why is that different? It may be that the feed is of a different quality, or that it is being fed in a different way, either by hand and thereby using more. The third reason is related to the typical management of farming system, that when you measure the conversion rate it is what is recorded as sold and being taxed upon. That means that you are paying taxes and registering all your purchases of feed, you are registering your sales against that and then you calculate your conversion rate. However, what about the farm-gate sale? It is typically 25%, so 1.2 is easily 0.9 in real life and I would agree with our colleague from Bulgaria who said: "that in fact the conversion rates are not the major problems" but it is a management practice and the way in which the fish is sold might confuse the picture of conversion rates.

Franisek Vacha (Research Institute of Fish Culture, Czech Republic). I would like to mention the particular situation in my country, which seems to me to be a bit different. The aquaculture system is completely based on the production of common carp — nearly 90% of fish production is common carp and production is still stable. It means that there was no decrease in the transition period. It also means that the fisherman knows more or less how to produce carp. It seems to me that we do not know properly how to process carp, mainly fish from the cyprinid family, which is different from processing of, for example, trout or salmon. There are different ways to process it and it would be very useful for the country to penetrate the field with different skills. We need to know how to process fish in a proper way with HACCP implementation, and sanitary requirements, which are a main worry in your countries.

Chairman. I think much of that will probably come again in the HACCP concept in the following sessions. Are there any more burning questions, if not I will summarise the three points that have come home most strongly to me during these discussions. The fact that there is scope for considerable training of trainers is something that will be of interest. Business management training would also seem to be a need in many countries of the region. The third issue was for a compendium of case histories to be developed in some way. I think that needs quite a lot of further thought. It may well be of interest to donors, it may well be simply of interest from one country to another. What is your experience in trying to do this? It is a mixture of cross transfer of information and also the training issues, which have been raised as a result of that.

For the session now we should thank our speakers in the earlier discussion session and the two key members who have been leading this discussion session. Other than that thank you very much.

SESSION 3

Quality Assurance and Hygiene in Relation to International Trade Compliance

Chair: Ian Goulding
Rapporteur: Linda Nicolaides

Problems Facing Fish Exporters with a Focus on Quality Issues in International Trade

John Ryder¹, EASTFISH, Denmark

ABSTRACT

With the transition from a centrally controlled to a market-driven economy there have come many opportunities for fish processors in central and Eastern Europe. Domestic and regional markets for fish products are expanding and purchasing power is gradually increasing. There is also an opportunity, already taken by several companies, for the export of fish to western markets, the main one of course being the EU member states. A key issue in this trade is quality, and underlying this is the importance of ensuring consumer safety. Major markets, including the EU and the USA, have now imposed regulations covering the import of fish products. These regulations were set up to protect the domestic consumer and ensure that all fish products in the market-place are equally safe to eat irrespective of their origin. Processors and would-be exporters must make significant investment in human and capital resources in order to comply with these regulations.

INTERNATIONAL TRADE IN FISH

In Europe, the value of fishery imports and exports (including intra-regional trade) has tripled in the years from 1984 to 1994. Most of this trade involves the industrialised countries of Europe — members of the EU and the European Free Trade Association (EFTA). The transition countries of central and Eastern Europe are now increasing their share. Trade in fish and fishery products for these countries has roughly doubled since 1990. Imports have increased in value from USD 475 million in 1990 to USD 1.2 billion in 1996, whereas exports have grown from USD 1.2 billion to USD 2.4 billion in the same period. Some export statistics from selected countries are shown in Table 1.

It is evident that Russia accounts for the bulk of the fish exports. The growth in exports is due largely to vessels from these countries landing directly into foreign ports where higher prices could be obtained than in domestic markets. However, the number of fish processors who are looking to the export markets both regionally and internationally is also increasing. This is seen by many as a valuable market. There are also many processors who are looking to become contract processors for western European companies, importing raw material and then re-exporting the final products back to the western markets, mostly the EU.

In order to achieve these new targets, governments and the private sector will have to improve fish quality and safety to comply with international standards of the EU and North America.

¹ John Ryder works with EASTFISH in Copenhagen as the Processing and Quality Advisor. He has worked for 18 years within the seafood sector in New Zealand, USA, UK and, latterly, in developing countries in Asia and Africa, and in the transition countries of central and Eastern Europe. The core of his activities has been the thrust towards improved value and quality of fish resources via research, consultancy and training. John has a doctorate in Food Science from the USA and a BSc. Hons in Biochemistry from the UK. During his career he has held positions as a Research Programme Manager, Acting Head of Department and Projects Director.

Table 1: Exports of fish and fishery products ('000 USD)

Country	1992	1993	1994	1995	1996
Russian Federation	825 073	1 469 646	1 720 459	1 635 145	1 686 162
Ukraine	0	112 370	114 850	146 015	164 950
Latvia	12 385	30 608	54 288	89 993	112 961
Estonia	12 357	48 055	101 212	107 777	100 026
Czech Republic	0	22 344	24 478	30 378	32 230
Lithuania	8 444	6 851	18 226	39 562	24 434

PRESSURE FOR IMPROVED QUALITY

So what is the pressure for improved quality? It is wider than just the need to comply with the law, though this is often a kick-start to wider initiatives in quality systems improvement within companies. In the main the law applies safety considerations, i.e. fitness of the fish products for human consumption; other aspects of quality in its wider sense are generally left to market forces. However, issues such as labelling, market names and species misrepresentation are catered for in law.

The customer will often be stricter than legislative requirements with wider-reaching and more exacting standards. The bigger supermarkets, for instance, will regularly visit suppliers to ensure quality requirements are met, and will cease trading with any supplier that does not meet their standards.

Of course, it is ultimately the consumer that is forcing this drive for improved quality. Today's consumer, especially in the industrialised countries, is a very discerning buyer, and is expecting higher and higher standards and a wider choice. This presents challenges to the fish processing sector, and especially to this sector of central and Eastern Europe.

The need to maintain or increase competitiveness and profitability will also put pressure on companies to respond to a drive to increasing quality. Not to do so will imperil their survival in the long term, and maybe even in the shorter term.

PROBLEMS BEING FACED

So what are the main problems for fish exporters from central and Eastern Europe? From the perspective of quality enhancement, they can be viewed as:

- > Understanding the international legislative requirements
- > Understanding product standards and customer requirements
- > Deciding the strategy to meet requirements
- > Financing the strategy.

The first two are parallel problems, which must be fully understood before making decisions on strategy and seeking finance.

Understanding the legislation

The main laws of the EU and the USA are the EU Council Directives 91/493, 94/356 and 91/492, and the US Food and Drug Administration Federal Register 21CFR Part 123. This legislation is focused on ensuring the safety of fish being placed on the respective markets for human consumption. The US rules also cover economic fraud and decomposition (spoilage). There is also a plethora of related legislation that affects fish imports, especially into the EU; a selection of some of the more important directives that affect exporters are listed in Table 2. These apply to fish and fish products, aquaculture animals and products and live molluscs. The items covered include own checks systems (HACCP), labelling, marketing, packaging, waste, border checks, parasites, export and import certificates, control of disease — veterinary, health certificates and the environment. There have been several amendments to these rules in the ensuing years; these can be obtained through local EU offices.

Understanding product standards and customer requirements

As mentioned earlier, the customer can often demand even stricter controls. Having said this, it is also generally true that the customer requirements are very clearly defined and laid out, making their understanding that much easier. Of course, different customers will probably have differing requirements, thus necessitating systems that can handle these requirements.

- **Product specifications.** Typical product specifications would include criteria on species, size, grade, quality, product form, labelling, package size and materials. Further to these though is the need for exporters to have consistency in meeting the specifications. Importing companies do not want the required standard once or twice, but all the time. They also prefer reliability of supply, that is, a consistently high quality product week in and week out. Of course, fish production can often be seasonal in nature, but modern preservation techniques can now ensure year-round supply of most fish species. The product with the right quality also has to be at the right price — this does not need any further comment.
- **ISO certification.** It is becoming increasingly common for suppliers to be ISO (International Standards Organisation) certified, and those exporters that do not strive for this in the medium to long term will pay the penalty, as their competitors who have invested in this lengthy exercise will take their business.

Two further issues that are becoming important in the fish trade and pose yet more problems are eco-labelling and sourcing.

- **Eco-labelling.** This is a delicate issue at present, and is the subject of much discussion and debate. It focuses on certification that fish and fish products are being sourced from fish stocks that are being sustainably managed. There are several well-publicised initiatives underway, but there are also calls for bodies such as the Food and Agriculture Organization (FAO) to provide independent and expert advice on the production of guidelines for the eco-labelling of products.
- **Sourcing.** Sourcing or traceability requires that products sold to the consumer can be traced back to their source, i.e. identify which channels the product has passed on its way from the water to the dinner table. This is becoming another challenge for fish processors and exporters, and will require investment in systems that can deliver solutions to this problem.

Table 2: Selection of EU Directives, Decisions and Regulations that affect fish exporters

Number	Date of decision	EU Directives, Decisions and Regulations	Official journal	Page no.	Date of publication
89/107/EEC	21.12.88	Council Directive on the approximation of the laws of the Member States concerning food additives authorised for use in foodstuffs intended for human consumption	L40	27	11.2.89
91/493/EEC	22.7.91	Council Directive laying down the health conditions for the production and the placing on the market of fishery products	L268	15	24.9.91
92/48/EEC	16.6.92	Council Directive laying down the minimum hygiene rules applicable to fishery products caught on board certain vessels in accordance with Article 3(1) (a) (i) of Directive 91/493/EEC	L187	41	7.7.92
93/13/EEC	22.12.92	Commission Decision laying down the procedure for veterinary checks at community border inspection posts on products from third countries	L9	33	15.1.93
93/51/EEC	15.12.92	Commission Decision on the microbiological criteria applicable to the production of cooked crustaceans and molluscan shellfish	L13	11	21.1.93
93/140/EEC	19.1.93	Commission Decision laying down the detailed rules relating to the visual inspection for the purpose of detecting parasites in fishery products	L56	42	9.3.93
94/62/EC	20.12.94	Council Directive on packaging and packaging waste	L365	10	31.12.94
94/356/EC	20.5.94	Commission Decision laying down detailed rules for the application of Council Directive 91/493/EEC, as regards own health checks on fishery products	L156	50	23.6.94
95/22/EC	22.6.95	Council Directive amending Council Directive 91/67/EEC concerning the animal health conditions governing the placing on the market of aquaculture animals and products	L243	1	11.10.95
95/71/EC	22.12.95	Council Directive amending the Annex to Directive 91/493/EEC	L332	40	30.12.95
96/11/EC	5.3.96	Commission Directive amending Commission Directive 90/128/EEC relating to plastic materials and articles intended to come into contact with foodstuffs	L61	26	12.3.96
96/21/EC	29.3.96	Council Directive amending Commission Directive 94/54/EC concerning the compulsory indication on the labelling of certain foodstuffs of particulars other than those provided for in Directive 79/112/EEC	L88	5	5.4.96
97/4/EC	27.1.97	Council Directive amending Directive 79/112/EEC on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuff	L43	21	14.2.97
97/61/EC	20.10.97	Council Directive amending the Annex to Directive 91/492/EEC laying down the health conditions for the production and the placing on the market of live bivalve molluscs	L295	35	29.10.97
98/419/EC	30.6.98	Commission Decision amending Decision 97/296/EC drawing up the list of third countries from which the import of fishery products is authorised for human consumption	L190	55	4.7.98
103/76	19.1.76	Council Regulation laying down common marketing standards for fresh and chilled fish	L20	29	28.1.76
104/76	19.1.76	Council Regulation laying down common marketing standards for crustaceans	L20	35	28.1.76
1536/92	9.6.92	Council Regulation laying down common marketing standards for preserved tuna and bonito	L163	1	17.6.92
136/89	21.6.89	Council Regulation laying down common marketing standards for preserved sardines	L212	79	22.7.89

Source: Rossi, C. (1998) *Guidelines for Fish Exporters – Requirements for the European Union Market*. EASTFISH Fishery Industry Volume 20. 129pp.

Deciding the strategy

The issues described above are not exhaustive, and pose a significant set of problems to processors and exporters in the industrialised countries of western Europe. These individuals are thoroughly versed with the market-driven economy and have for many years been involved in eking out higher quality products from their dwindling fish resources. It is therefore even more difficult for processors in central and Eastern Europe to meet these challenges when they have to change from a production-led and centrally controlled economy to the consumer-led market economy. In many cases, they start from a much poorer position with old plant and equipment, poor transport options and more difficult access to the necessary expertise, human and capital resources and finance.

So the next problem for the exporters is to decide how to respond to the need for improved quality. Most processors will need to invest in both equipment and new systems, and many will need to invest in plant and factories, and training courses for skills' development. A few will also need to purchase or lease land to start anew, as the existing facilities are not suitable, i.e. poor waste options, not near to the market, poor design of existing plant, etc.

Deciding on the investment needed is a difficult and time-consuming task as the options available can be quite considerable. For instance, should the company invest in a large, brand new state-of-the-art processing facility at a higher risk and longer pay back, or take a more modular approach investing in a smaller facility using reconditioned second-hand equipment, but making sure that extra cold store space or processing space can be added at a later date easily? The latter is lower risk but may turn out the more expensive option in the long term if the business is successful. Because of the time needed to do this job properly, this step is often not done in enough detail. However, it is an essential step.

From EASTFISH experience, it is often also the case that the original investment proposal is significantly undervalued — frequently only an equipment list is produced. On further discussion, it becomes apparent that significantly more investment is needed to make the business idea realise its goals. Commonly, both the need for investment in human resources, e.g. business management and technical skills, and infrastructure, e.g. waste management, access to potable water, electricity etc. are undervalued or sometimes not included at all. An analysis of the associated investment costs with the likely returns is an essential task in determining the best strategy for companies and will flag areas that need further assessment or prevent poor ideas from going any further. EASTFISH can undertake this exercise for companies with important inputs from the companies themselves.

Financing the strategy

This is probably the most difficult problem for companies which are looking to invest in improved quality. As financing is covered in detail earlier in Session 1 (see the paper by Larsen 'Preparing Financial Proposals and Project Financing'), only brief mention is made here.

At EASTFISH, we have developed a phased approach to finding the finance for business ventures:

- **Develop a business plan or feasibility study.** This is an important step: it provides the necessary information for potential partners and funding sources, e.g. banks, to make decisions about partnership and financing.

- **Identification of potential partners.** In many instances, the presence of a western partner dramatically improves the chance of accessing low rate loans. This is because money available in many western countries can only be accessed if there is a partner organisation from that country. The business plan is the hook to attract the partners.
- **Identification of finance sources.** This can come from a variety of international and national sources and includes commercial banks, intermediary banks (for institutions such as the European Bank for Reconstruction and Development [EBRD] and World Bank), export credit guarantees, donor organisations (mostly for feasibility studies) and others. An understanding of the requirements of the various sources of funding is essential to tailor a business proposal to the best finance source.

This phased process must be undertaken in a systematic and open manner which will allow all the potential partners a very clear idea of their responsibilities and roles in any business proposal. Trust is a vital ingredient to any successful business venture.

CONCLUSION

It may seem that the problems are considerable — and they are under the present economic and political climates. It is therefore encouraging to see the increasing number of central and Eastern European entrepreneurs that are succeeding in producing high-quality products destined for exacting markets.

Polish Experience in Harmonising Fisheries Regulations with EU Legislation

Jolanta Hillar¹ and Kazimierz Kolodziej², Sea Fisheries Institute, Poland

ABSTRACT

The Polish fish processing industry plays an important role in the domestic food sector. The fishing industry is a developing sector, as reflected in the increasing supply of products onto the domestic market as well as the export of fish and fishery products to other countries, including the EU. In recent years, a degree of stabilisation has been observed in the market supply. Concurrently with the harmonisation of the national fisheries laws with EU requirements, adaptation work in fisheries is under way with a view to conforming with EU regulations. Many regulations relating directly to fish processing have been 'adapted' although only some have been officially implemented. At the same time, modifications consistent with EU requirements are being introduced into the institutional system. Information for producers on EU requirements, disseminated by the Sea Fisheries Institute, enables prompt adaptation action to be taken by industry. Adaptation is time-consuming and capital-consuming, often hinders progress and requires different forms of external assistance, particularly in the training and advisory areas.

INTRODUCTION

In Poland, there are about 400 fish processing factories, many of which are located in the coastal belt. As a result of the changes that occurred in recent years, many factories changed their legal status: about 95% of factories are privately owned, several are limited liability companies, and only a few fishery companies remain state-owned. Poland has about 395 fishing vessels, most of which are privately owned, with only eight belonging to the state; Poland also has 33 state-owned deep-sea factory trawlers.

According to Central Statistical Office data, production of fishery products in 1996 totalled 295 260 tonnes: frozen and fresh fish processed to a different degree predominate (about 51% of production), followed by canned fishery products and fish preserves (about 18% of total production), marinades (about 14%), salted fish (about 9%), smoked fish (about 6.5%), and live fish.

¹ Jolanta Hillar graduated from the Technical University of Gdansk, Poland, in 1991 and started working in the Fish Processing Technology Department at the Sea Fisheries Institute, Gdynia. In 1995 she was appointed Head of the Quality and Standardisation Group. She is a chemist and food technologist and her main activities are in research fish processing, and training and advising the industry in HACCP and quality assurance systems. Jolanta is a delegate to Codex Committee on Fish and Fishery Products; she is a member of the Standardisation Commission on Fish and Fishery Products and also a member of the Polish Food Technologists' Association.

² Kazimierz Kolodziej graduated from the Technical University of Gdansk in 1966 and, since 1974, has been working at the Sea Fisheries Institute where he is a Head of the Fish Processing Laboratory. His specialism is fish technology and main activities are R&D of fish processing, design of factories and production lines, training and advising the fish industry in quality management and hygiene technology. He has many years' experience in fish technology and processing and has worked as a production manager in the canning processing department of a deep-sea company and also as a fisherman and technologist on board freezer trawlers.

Jolanta and Kazimierz are co-authors (with P. Bykowski) of 'HACCP in the Fish Industry — A Practical Guide' 1996, Sea Fisheries Institute, Gdynia, Poland.

The Polish fish processing industry is based, to a large degree, upon imported raw materials and half-finished fishery products. The principal fish species imported, mainly from Norway, are herring (about 100 000 t/year) and mackerel (about 50 000 t/year). Poland also exports fish and fishery products to many countries. In 1997, a total of about 217 600 tonnes of fish and fishery products were exported, mainly to Germany and Denmark.

APPLICATION OF EU FISHERIES LEGISLATION

Conforming national regulations with EU requirements

'Adaptation' of Polish legal regulations to EU requirements began after Poland's association with the European Community was signed on 16 December 1991. Article 74 of this agreement regulates the issues of conformity of legal regulations and standards. Thus, the process of adaptation of the existing regulations has existed for a few years now and, additionally, according to Decree of the Ministry Council No. 10 of 29 March 1994, all newly enacted legal regulations must conform to EU legislation. In July 1998, negotiation began on Poland's membership in the EU in the area of fisheries and fish processing. At this stage of the so-called screening, the degree of conformity of national regulations to EU laws was verified. A considerable part of these regulations has already been adapted but they have not yet been implemented. The remaining regulations are being developed or evaluated. Some documents will be considered during detailed negotiations relating, among other things, to veterinary inspection and health quality assurance requirements.

This process is connected to the changes introduced into the Polish standardisation system, which began with the implementation of the Polish standardisation act in 1993. This regulation cannot be fully implemented until work on legal acts defining the requirements relating to food health quality is completed. In this transitional period, ministers introduced a series of obligatory standards. According to the new approach, a characteristic feature of the new food legislation is a change in attitude toward product safety and quality. The traditional and ineffective control of the final product is replaced with the management and control of the production process at each stage. Producers' responsibility for product safety aspects of quality forces them to take strict action on in-house control. Hence, internal control systems based on the Hazard Analysis Critical Control Points (HACCP) concept are being applied more frequently in connection with official control, overseeing the correctness of the development of these systems as well as their effectiveness in practice.

Fish processing and trade

The most significant document for fish processing is the regulation on sanitary requirements in the production and trade of fish and fishery products. Official documents regulating these issues were enacted in the early 1960s and 1970s. The food health conditions and nutrition act (1970), including fish and fishery products, is the basic document defining food health quality requirements. Sanitary requirements for onshore fish processing factories were regulated by health standard ZN-66/ZGR-09008 of 1966: 'Sanitary requirements for fish processing factories: general conditions' — an executive act of the lowest order. Requirements defined in these documents were insufficient from the point of view of health quality assurance of fishery products; they did not conform to EU regulations either.

The new document concerning hygienic and sanitary conditions by entities dealing with fish catches, production, processing and trade, comprises the requirements contained in the following EU regulations (and see Table 1 in the previous paper by Ryder):

- Council Directive 93/43/EEC of 14 June 1993 on the hygiene of foodstuffs
- Council Directive 91/493/EEC of 22 July 1991 laying down the health conditions for the production and placing on the market of fishery products
- Council Directive 92/48/EEC of 16 June 1992 laying down the minimum hygiene rules applicable to fishery products caught on board certain vessels
- Commission Decision 94/356/EC of 20 May 1994 laying down detailed rules for the application of Council Directive 91/493/EEC regarding own health checks on fishery products

and

- Recommended International Code of Practice, General Principles of Hygiene of the Codex Alimentarius FAO/WHO. Particular annexes to this document define in detail the requirements that have to be met by fish processing factories, factory trawlers, fishing vessels, onshore wholesalers and fish auctions. In addition, Annex 6 regulates the basic requirements regarding internal control based on HACCP with respect to all the entities concerned by the regulation.

As mentioned above, this new regulation also includes the requirements for future fish auctions in Poland. Currently, preparatory work on this is under way; in 1996, two projects were carried out on the development of principles — one funded by the EU and the other by the FAO. This work is presently being evaluated and discussed through an intergovernmental initiative consisting of the following: the Department of Fisheries of the Ministry of Transportation and Maritime Economy and the Veterinary Department of the Ministry of Agriculture and Food Economy as well as the Sea Fisheries Institute (SFI).

Fish marketing

Work is also being carried out with respect to a batch of EU documents comprising marketing standards, with particular emphasis on Council Regulation (EC) No. 2406/96 of 26 November 1996 laying down common marketing standards for certain fishery products. Analysis showed that most of the requirements defined in these documents are contained in the existing national documents, i.e. in Polish standards and specific fishery standards. Some of these standards are obligatory until they are replaced with other legal acts; others are applied on a voluntary basis. In order to attain complete conformity with EU regulations, it is necessary to supplement these documents with missing elements and to change their legal status so as to give them an equal rank to the EU regulations defining these issues. Poland — particularly the fishermen's community — is seeking to include in the original EC documents Baltic herring up to 0.025 kg/fish in weight, which corresponds to a minimum length of 16 cm, as well as sprat for consumption purposes. These are fishes caught on a mass scale in the Polish Baltic zone, important from the commercial perspective.

Associated changes

Associated with the work on legal acts, structural and institutional changes are occurring in Poland. To date, marine fisheries have been under the jurisdiction of the Ministry of Transportation and Maritime Economy. Preparations are currently being made to move the Department of Fisheries to the Ministry of Agriculture and Food Economy, so that the fishery sector belongs to one department comprising all foodstuffs, similar to EU countries.

Changes are also occurring in producers' organisations. Until now, there was only one Fishery Development Association, situated in Gdynia, which comprises both fishermen and fish processors. On account of the frequently different interests of both these groups, the activity of the association has been of limited scope. Recently, additional, separate organisations have been formed, such as the Fish Processor Association, in Koszalin, and the National Fishery Chamber, in Ustka. In July this year, representatives of the new associations participated, in Brussels, in a joint round of negotiations on Poland's integration with the EU with respect to fisheries.

The national system of official food control, which has its legal base in the Decree of the President of Poland of 1928 and the Polish Food Act of 1970, is also undergoing change — including fish and fishery products. The adjustment is related to the conformity to EU requirements as well as to the changed socio-economic conditions. The previous system was based on the principles of a planned economy and was characterised by differentiated organisational structure, a range of duties, and accountability to different ministries. As a result, official food control became barely effective, and privileges and duties of inspectors often overlapped. Therefore, the necessity arose to change this system and to adapt it to EU standards, which is a difficult process; nonetheless, work is gradually being done in this area.

ASSISTANCE IN IMPLEMENTING NEW REGULATIONS

Implementation of the new regulations requires an adequate adjustment period to adjust to modern methods, in the first place, and to develop and implement system solutions, including the application of the HACCP system in fish processing. Often, this is connected with high expenditure as well as investment in the factories, which many companies cannot cope with. There is, however, a general awareness and a sense of the necessity to implement changes in the fishery sector, where, for a few years now, producers have been required to meet the requirements defined in EU regulations. This affects chiefly fish processors exporting their products to the EU.

At present, in Poland, there are a few fish processing factories with implemented HACCP systems, including one with a certified quality assurance system consistent with PN-ISO 9001. Many factories are currently developing and implementing HACCP systems, many others have adaptive programmes in this area; work is often focused on putting actions already taken in order. In the first place, processors concentrate on modernisation, adapting their factories to EU requirements, and on complying with good hygiene and production principles.

Dissemination of information

Concurrently with the work on harmonising legislation, the industry regularly receives information about EU requirements that fish processors must — or will soon have to — meet. The SFI, as the only fisheries institute, plays an important role in the distribution and dissemination of the information by means of conferences, seminars, training courses and publications. Each year, we organise the National Conference of Fishing Industry Technologists and Quality Service, where, apart from the results of scientific and research work, we pass on detailed information on EU requirements. To this end, we also invite representatives from EU countries to participate so they can share their practical experience in this area. For a few years now, part of the conference has been regularly devoted to health safety assurance based upon HACCP system analysis as well as quality management as seen from the perspective of ISO 9000 standards.

The industry also receives information through various specialised publications, such as *Wiadomosci Rybackie (Fishery News)* and *Magazyn Przemyslu Rybnego (Fishing Industry Magazine)*. In the institute, we have also prepared a handbook on the development, implementation and maintenance of the HACCP system in fish processing. This handbook describes in detail the principles of the system itself as well as the rules for developing, implementing and monitoring the system. It was the first such publication in the Polish language directed at fish processing. It also generated interest from other food processing sectors.

Training

Realising that theoretical knowledge by itself is insufficient, we also conduct training courses with participation of experts from EU member countries whenever possible. In 1996, we carried out a project funded by the FAO, with participation of an expert from UK, dealing with practical HACCP training of representatives of the industry involved with various types of fishery production. A particular advantage was that training courses actually took place in processing factories, based upon ongoing production processes, and that veterinary inspectors were also included. Furthermore, as a result of the teamwork, the first HACCP plans were created for actual conditions, and were later used by the factories in which the training courses were conducted.

An additional advantage was that trainers were trained to conduct national training courses and to give practical help and advice to the industry, thanks to which, in succeeding years, we organised similar training courses at SFI, funded by the Ministry of Transportation and Maritime Economy. These courses were directed at both onshore processors and technologists processing raw fish materials on board vessels. Training courses in the HACCP system are also directed at inspection service officers. In 1997, within the framework of the Poland, Hungary Assistance for Reconstructing the Economy (PHARE) project, at the National Veterinary Research Institute in Pulawy, about 600 veterinary inspectors were trained, including 100 from the fishery sector. This project was also carried out in co-operation with experts from Holland and UK.

Technical assistance

With assistance from and in co-operation with the industry, we also carry out implementation projects co-funded by the Polish Scientific Research Committee and, frequently, with participation from foreign experts. For instance, in 1993, a project was completed on the implementation of cleaning technology in a herring processing factory and its adaptation to EU requirements with regard to both general sanitary requirements and quality assurance systems according to PN-ISO 9002, including HACCP. This project was carried out in co-operation with specialists from Denmark. Currently, we are conducting a large-scale project on canned fish products of defined nutritional value, one of the objectives of which is the development and implementation of a quality assurance system according to PN-ISO 9002, including the HACCP system. Similarly, to the previous project, we are co-operating with specialists from Denmark.

SUMMARY

A great advantage of the Polish fishing industry is the well-prepared management staff, who often have some form of higher education and sound practical experience. Equally positive is a recent considerable increase in the awareness of the advisability and merits stemming from the implementation of EU regulations by adapting the industry to the requirements defined in these regulations. Our experience shows, however, that there is

still a need for practical training in the fishing industry, and that other forms of assistance are indispensable, including advice on adaptation to EU requirements, on development and implementation of the HACCP system, application of pro-ecological solutions, etc. Equally important is financial help, as the lack of funds is often the main factor impeding progress in the action taken by the Polish industry; this leads to delays in the attainment of complete conformity to specific requirements. Results of the current adaptation work should make it possible to maintain at least the present favourable situation in the trade of fish and fishery products with the EU.

Quality Assurance and Food Safety Development Needs in Romania

Gabriela Rotaru¹ and Carmen Moraru², University Dunarea de Jos Galati, Romania

ABSTRACT

Changes in the Romanian political and economical system have resulted in fundamental changes of the food processing sector: an important part of food production has been transferred to small and medium-size private enterprises, and the focus has changed from quantity to quality and safety. In recent years, increasing importance has been given by authorities, manufacturers and consumers' associations to solve the significant food safety and hygiene problem. All the major food standards and their requirements were revised to comply with the EU regulations, and some government decisions on food quality and safety were issued. Recently the draft of the Romanian Food Law was released; this is intended to be the fundamental document of the Romanian food sector. Besides the need to improve laboratory services, production facilities and equipment, there is a real demand for specialist training in food quality and safety, particularly for Hazard Analysis Critical Control Point (HACCP) systems. In the last two to three years awareness of the importance of HACCP and quality assurance systems has greatly increased, and the industry is now looking for sources of information and for training. Considerable domestic and foreign effort is being made to provide the sector with the essential needs — including training — but these efforts cannot be successful without significant funding.

INTRODUCTION

Since 1990, general changes that took place in Romania have fundamentally affected the food sector: an important part of the food processing sector, previously carried out only in large capacity plants, has been transferred to small and medium-size enterprises, most of them privately owned. Although the creation of the European market and the movement towards a more intensive co-operation between our country and the West have generated many opportunities there are also many new problems for the Romanian food sector.

One of the consequences for this sector, as well as for the whole economy, was the necessity to change the focus from quantity to quality and safety. This was demanded by the external market and, increasingly, by the domestic market. The Romanian food market has developed new needs and requirements as people became increasingly aware of the importance of their nutrition, and as more choices became available.

¹ Gabriela Rotaru is currently Head of Food Quality and Safety Department at the University of Galati, Romania, and is running the food quality undergraduate and postgraduate programmes; she has a PhD in Food Science and has recently become a Professor. She has been a consultant to the Romanian food sector and, recently, was invited to lecture at a Syrian University.

² Carmen Moraru is a lecturer within the same department and has been involved in recent years in a series of national and international activities in food safety, most of which are in conjunction with the Romanian Know How Fund Fisheries Project. By the end of the year, she will obtain a PhD in Food Science.

Both authors have written the first Romanian book on HACCP, with the financial support of the British Embassy in Romania and with the technical support of the Know How Fund Fisheries Project. Carmen Moraru presented this paper at the Symposium.

CURRENT SITUATION

For a better understanding of the status of the Romanian food sector, one could use the FAO/WHO rating of 1978, where three stages of development of the countries were identified from A (the poorest) to C (the best). Situations A and B are encountered mainly in developing countries, while situation C is specific to the developed nations. Regarding food hygiene practices, and the development of agriculture, industry and a market economy, Romania would be rated as a B-type country: for criteria like basic hygienic practices, supply of potable water and literacy, it would undoubtedly be included in the C category. Of course, the aim is to overcome the existing problems and to be included fully in the C category.

One of the problems that needs special attention is food hygiene and, especially, food safety. This has a specific impact on the health and life of the consumers, as well as on the economic success of the companies involved. In this context, increasing importance is given by authorities, manufacturers and consumers' associations to solve food safety problems. Although food poisoning and food-borne disease outbreaks are not widespread in Romania, almost every year there have been some recorded cases of mushroom poisoning, trichinelosis (from pork meat contaminated with *Trichinella spiralis*), or salmonellosis. With a few exceptions, these are rather isolated cases, involving mainly individuals or families, not large communities. There is also the fear that the actual number of food poisoning cases is higher, but under-reported.

FOOD SAFETY AND QUALITY CONTROL SYSTEMS

Existing information is, however, sufficient to justify the importance of an effective food safety control system, which can be part of the national food control system. Such a system should have two major functions:

- protection of the consumers' health
- economic interest and the promotion of national and international food trade.

The main components of the food safety and, more generally, food quality systems, according to the Codex Alimentarius recommendations of 1987, are:

- Food legislation
- Food inspection and control administration
- Food facilities and equipment
- Training and education/human resources development.

Food legislation

Compared to the early 1990s, when the legislative framework related to food and food products was lacking, important efforts are being made nowadays by the Government and responsible authorities to release all the necessary laws and regulations in order to support modern, competitive food production. In the last three to four years the food standards and their requirements were revised to comply with the EU regulations. A special governmental directive was also issued; this stipulates the obligation for all the companies which carry out activities in the food sector to implement food safety assurance systems, including Hazard Analysis Critical Control Point (HACCP).

The Government, in collaboration with inspection bodies, professional associations, research institutes and academia operating in the domain of food and food products, is preparing the draft for the Romanian Food Law, that will incorporate national and

internationally compliant provisions, and will be a fundamental document for the food sector. However, although the existence of a proper legislative framework is necessary, it is not enough to ensure high standards of food production, distribution and retail services. In some cases, even if the laws exist, they are not properly enforced.

Food inspection and control administration

In Romania, there are several government agencies involved in the control and inspection of food safety and quality: the Quality and Standards Division, the National Sanitary/Veterinary Agency and the Veterinary Police (all within the Ministry of Agriculture and Food), the Public Health Institute, the Consumer Protection Organisation, the Romanian Expertise Laboratory (LAREX), as well as several accredited food analysis laboratories. As a result, food producers, distributors and consumers may sometimes receive conflicting information and efforts are duplicated by the enforcement officers. One of the problems of these agencies is the lack of trained personnel, but the situation has improved compared with the previous years, when there was also a lack of professional ethics.

Laboratory services, one of the most important components of the food safety and quality, are facing difficulties in maintaining costly, sophisticated equipment required for some analysis. However, as the responsible authorities understand their importance, funds have been allocated in recent years and the situation of the laboratories is continuously improving.

Food facilities and equipment

As regards production facilities, there are two different situations:

- Old companies, with outdated, ineffective facilities and equipment, which do not meet modern requirements or facilitate the production of high quality, safe food.
- New or modernised companies, with domestic capital or joint ventures, which are properly equipped and use modern technologies.

Due to the actual legislative requirements, companies from the first category will soon have to change their equipment and transform their facilities. Otherwise, they risk being shut down either by the authorities or by bankruptcy, as they are no longer able to face competition and the quality requirements of the consumers.

Training and education/human resources development

The quality and safety of food products depends largely on two key elements:

- The existence of effective quality and safety assurance systems in the companies, based on thorough knowledge of the manufactured food, process and related hazards
- A high level of commitment from everyone involved in the process, from the top to the worker level.

Both these elements depend heavily on the level of education and training of the people involved in the food system.

DEVELOPMENT NEEDS

Food engineers and technologists, working in Romanian food companies, generally have both fundamental and complex knowledge about food quality and safety. But this applies mainly to the newer graduates who, unfortunately, do not have enough practical experience. The older generations need to update their knowledge, as the approach for food quality and safety has dramatically changed in the recent years. Also, the workers do not always have the necessary knowledge and skills to work with food, as some were not trained as food specialists, but were reoriented towards this sector by the restructuring of the economy.

There is a real demand for training especially for the last two categories, but also for those involved in food inspection and regulation activities. This has, for some years, been a matter for discussion at national level, and it was unanimously recognised that the solution might be the organisation of intensive, short courses. There have been several attempts to solve this problem, although little progress has been made as yet. For instance, the EU PHARE (Poland, Hungary Assistance for Reconstructing the Economy) programme is in the process of approving projects to assist the Romanian Government and the food sector to develop standards for food safety that comply with the EU norms.

A special training need is HACCP, which is actually a part of the food quality and safety assurance system itself. One should realise that without proper training in the establishment and permanent use of HACCP, the full benefits of this system are not likely to be achieved for the Romanian food industry, regulatory agencies or the consumers. In the last two to three years, awareness of the importance of HACCP and quality assurance systems has considerably increased, and the industry is now looking for sources of information and training. Therefore, it is the responsibility of those who can provide such training to make things happen.

To achieve the final aim of quality, safety and European integration of the Romanian food sector, the last — but not the least problem — is funding. Funds are needed to improve the infrastructure, purchase equipment, train personnel, and monitor food operations. This requires long-term, cost-effective strategies of the Government and of the food authorities; the limited resources should not result in any cost-cutting in the food safety control system.

Recent Changes in Fish Inspection and Quality Control in the UK

Christopher Leftwich¹, Fishmongers' Company, UK

ABSTRACT

This paper briefly describes the old traditional type of fish inspection based on organoleptic assessment and the industry's use of the UK Torry Research Institute scoring system to evaluate quality. The reasons for the changes and the legislation, which has brought about these changes, are explained. Finally the paper illustrates how the emphasis on fish inspection has moved away from being based only on organoleptic assessment to a combination of fish and hygiene factors.

BACKGROUND

In order to understand and appreciate the recent changes that have taken place in fish inspection and quality control it is necessary to know what went on in the past. Previously fish inspection was based almost entirely on organoleptic assessment, i.e. the use of your own senses of sight smell and touch. The only products that differed from this were bivalve shellfish and cooked shellfish: in these cases microbiological standards were employed but the standards were not legally binding.

The use of organoleptic assessment was widely recognised and accepted. The Torry laboratories established a worldwide standard in Aberdeen, Scotland, many years ago and in spite of the recent changes, the Torry scales are still used by many companies. This system relied on the inspector's ability to recognise the deterioration changes that occur in fish, and on the ability of the inspector to award a score for the quality of the fish — the score ranging from 10 for absolutely perfect fish down to 0 for putrid fish, with low-grade edible fish scoring in the region of 5–6. With a minimum amount of training an inspector could be trained to assess against the Torry scales. This allowed companies to buy product from each other against a standard that was universally accepted.

The advantages of this type of inspection are obvious: it gives a rapid almost instantaneous judgement and is non-destructive. It also has a hidden advantage of using similar criteria to those which the consumer uses when making a purchase.

The only legal standards that existed in the UK were absolute standards. The fish had to be fit, or wholesome, for human consumption. To a certain extent this is quite subjective — when does fish actually become unfit? The very concept of 'unfitness' implies that a consumer would become ill after consuming the product. Whereas, in reality, fish of extremely poor quality can be consumed with little deleterious effect to the consumer.

¹ Chris Leftwich is a qualified Environmental Health Officer with 25 years' experience, of which 20 have been in the food industry. For the past 14 years, he has been employed as the Chief Inspector of the Fishmongers' Company in charge of quality control and hygiene at Billingsgate Fish Market, London, the UK's largest inland wholesale fish market. He has travelled extensively as a consultant inspecting factories in various countries and lecturing on quality control, Hazard Analysis Critical Control Point (HACCP) and food hygiene. He has also runs practical courses in Romania on behalf of the NRI on fresh fish preparation, presentation and selling. At present, he is actively involved in establishing a seafood training school at Billingsgate Fish Market, which will be used to train people in the fish industry and to set up a training programme for school children.

It was because of this safety margin that fish offers that quality control at this time was almost entirely centred upon the product. With the exception of a few large companies, standards regarding premises and personnel were at best average and at worst were exceedingly poor. If the product looked good it did not really matter where it was produced.

All this was in the past, and was accepted because, by tradition, the fish industry was quite fragmented with many small and medium-size companies and very few large ones. With so much high-risk food business to look after, the enforcement officers paid very little attention to the fish industry.

RECENT CHANGES

Over the last 10 years the situation in the UK has changed and moved on quite rapidly. This is due to three main factors:

1. Food Safety Act 1990
2. European Union Council Directive on the Health Conditions for the Production and Placing on the Market of Fishery Products 91/493/EEC and the related commission decisions
3. Companies setting their own standards as a result of 1 and 2.

Food Safety Act 1990

The Act introduced a concept, known as 'due diligence' as a defence in food law for companies in the event of a complaint that could lead to a prosecution. If a company can prove that they have taken all reasonable steps to ensure the safety of their product, they would be exempt from prosecution, even if their product was found to be unfit or unwholesome etc. This forced many companies, particularly the large companies, into action. They started to introduce a series of measures that ensured that their company would be completely exonerated in the event of a complaint. In order to do this it was necessary to employ their own quality assurance personnel who could establish procedures and practices within their own company and could also undertake audits of all companies that supplied them with product.

For the first time quality control started to become more of a science rather than something that took place on an *ad hoc* basis. Companies were becoming proactive as opposed to reactive. Previously, many companies would simply wait for the official inspectors to come round and issue them with a list of things that needed to be rectified, whereas now they were beginning to act in advance. Total quality management started to become more of an accepted way of life; companies started to keep records and started to embrace the principles of the Hazard Analysis Critical Control Point (HACCP) system.

However, it was mainly the larger companies that could see the obvious advantages of introducing all the new controls that went down this route; the smaller companies continued to operate in the old ways. That is until the advent of the new EU Council Directive 91/493/EEC.

EU Council Directive 91/493/EEC

With the introduction of this directive, all EU countries and all those wishing to send products to the EU were required to conform to the criteria laid down. Companies were now being forced to upgrade their standards in line with those contained in the directive

and subsequent decisions relating to the directive. The directive also made it a legal requirement for companies to introduce a proper HACCP system. I will briefly mention here some points of interest from the directive (papers in the next session cover the requirements for HACCP):

- All premises to conform to the standards laid down in the directive and to become approved establishments. A three-year period of grace was built into the directive to allow companies the opportunity to upgrade the structure of their premises. If a company could not meet the required standards within that period, the competent authorities would not grant them establishment status, which in effect closed them down.
- Legal temperatures are now laid down for fresh and frozen fish.
- Standards are laid down for the histamine content of scombroid fish.
- Certain fish containing toxins are not allowed to be marketed.
- Microbiological standards have been introduced for cooked crustacea and molluscan shellfish.
- Standards are being introduced for determining the total volatiles for different species of fish.
- Fish must be examined for the presence of parasites.
- Certain fish must be examined for mercury content.
- Labelling requirements have been introduced to allow traceability of products.

These are a few examples of standards and rules being introduced by virtue of the directive, which are influencing changes in fish inspection and quality control.

Company standards

As a direct result of the two factors outlined above many companies view the legal standards as a minimum and have decided to introduce their own standards. In order to guarantee a first-rate product to their customers and also, to a certain extent, to protect themselves, the standards these companies set are far more stringent than those required by law.

In some circumstances the company standards can be patently unfair to suppliers. For example, their standard for the bacterial quality of fresh products will often include quite low total viable counts and the absence of pathogens such as *Salmonella*. In many temperate countries *Salmonella* is indigenous to the waters and its absence is almost impossible to guarantee. However, the customer is determining the standards and, unless the supplier is prepared to meet these standards, the customer will look elsewhere for their product.

These standards are under the control of the quality assurance personnel. It is their responsibility to set the company standards and introduce the means by which these standards can be monitored. The quality assurance manager is now required to keep detailed records on all procedures that are undertaken at the premises, including:

- temperature records of the product at various stages of production
- temperature records of all storage equipment
- details of all products entering and leaving the premises to ensure full traceability of the product and to ensure the products meet the company standards
- staff records including medical and training records
- cleaning schedules
- pest control records

- product sampling records
- maintenance programmes
- HACCP plan.

In addition quality control must include making policies on matters such as protective clothing, wearing of jewellery, visitors to the premises etc.

PRODUCT STANDARDS PACKAGING AND LABELLING

The EU is introducing new standards all the time; it is therefore essential that all prospective exporters to the EU keep themselves fully acquainted with any changes that are introduced. Details of the product standards for fishery products and packaging and labelling requirements are given in Appendix 1 of these Proceedings.

IN CONCLUSION

In the brief time allotted to cover this topic I hope that I have been able to explain some of the changes that have taken place in fish inspection and quality control. It is important to bear in mind that these changes are ongoing. As a result of membership of the EU, more and more legislative changes pertinent to fish and the fish industry are occurring all the time. All these changes will have a bearing on fish inspection and quality control and it is essential for anyone involved in this area of work to keep abreast of the changes.

DISCUSSION

Unidentified speaker. I would like to ask the speaker from Poland for comments after the talks with the EU in Brussels. Are there any practical steps which the Polish legislation should consider in the short term, so that it should also be accepted?

Jolanta Hiller (Sea Fisheries Institute, Poland). As I said, this stage was called screening. It was only revising Polish legislation; even though these were only drafts, they met the requirements of the new legislation. At this stage it was intended to assess the fields where it would be necessary for negotiations as to what we from Poland could expect of negotiations from the EU.

Unidentified speaker. So you do not feel any problems concerning the period for the dates in question?

Jolanta Hillar. There is still a need to improve this legislation in order to achieve the four-year conformity.

Unidentified speaker. You have said that only two factories in Poland have ISO 9000 certification, is that right?

Jolanta Hillar. No — only one — a fish factory.

Unidentified speaker. Do you intend to increase these kinds of factories that have ISO 9000 registration, and do companies and factories try to get that number, or do they just use local markets and is that enough for them at local markets?

Jolanta Hillar. There is a need for it from industry's point of view, especially as we have more and more supermarkets and other networks, and they require the industry to have ISO and implemented HACCP. That is why the industry wants to implement such a system; even though they have to implement HACCP, they think about ISO.

Mike Dillon (Mike Dillon Associates Ltd., UK) — *Question to John Ryder.* You mentioned John, that the most difficult aspect is actually to finance the plan. I would be interested in your comments on how companies ensure, once they finance the plan, that they are getting enough return to actually pay back what they borrow. Apart from putting a plan in place to arrange the finance, what do they do to ensure that the business pays back the money that they borrow for profitable enterprise? Which is what you are saying, is there a goal?

John Ryder (EASTFISH). Once the plan is in place, the procedures are going to have to be, as mentioned this morning, about using the plan as a monitoring tool as well. Obviously, they will do that as part of the business plan. They will have to have worked out a pay-back period. For it is part of the plan. I have talked at length with Bent Larsen on this and tried to understand the systems. But I think you may be talking to the wrong person here! They will obviously have to build this in before they even start, you cannot have this as a surprise after you have implemented all your systems and then turn round and say have I got the right system in terms of being able to pay back the bank.

Mike Dillon. Just a comment that the accounting procedures of most companies and the way they capture information often mean that they do not capture the benefits you are actually looking for.

Unidentified speaker — *Question to both speakers.* To what extent do we see any real evidence that supermarkets and concentration of retail power are causing a major impact on the changing of attitudes and quality management systems? I know from my own experience in the British fish processing sector that this has had a tremendous impact on suppliers and processors — far more than any regulatory changes. I was just wondering to what extent you see this happening, if at all, in some of the countries in central and Eastern Europe.

John Ryder. My experience is mostly hearsay from talking with people in these countries who are supplying the supermarkets, or supplying the higher quality trade. I completely agree with what you are saying, that the driving force seems to be that they have to meet the customer's

requirement as being the stricter of the two requirements. The law is there for the safety of the consumer, but the customer of the supermarkets is expecting a much higher standard. I do not have any first-hand evidence nor do I have it documented anywhere, so I cannot help you, but the hearsay evidence of talking to people in central and Eastern Europe would reflect exactly what you have said with respect to what has been happening in the UK.

Chairman. And what is the situation in Poland?

Jolanta Hillar. It is similar; the requirements from supermarkets force the producers to implement HACCP and ISO 9000 — not only in fish, but also all food commodities.

Unidentified speaker — Another question to Ms Hillar. The number of ocean food vessels is going down in Poland, do I understand correctly that you will not be developing ocean fishing any more?

Jolanta Hillar. That is very difficult for me as I am not dealing with fisheries in general, but the number of vessels is falling, probably because of the age of our fleet.

Unidentified speaker. But do you not develop any new ones?

Jolanta Hillar. Unfortunately not.

John Dallimore (J.D. and Associates, Germany) — Question to Chris Leftwich. There seems to be a specific problem. You mentioned bacteria, such as *Salmonella*, which are indigenous to marine species but there would also seem to be a problem with parasites. This has surfaced this year in Germany: the parasites are perfectly harmless as far as human consumption is concerned but they do not look very nice. We also had a similar problem with *Myxospora* cysts in the flesh of bream, which again is not a problem regarding human consumption but it also does not look very nice. There does not seem to be any clear regulation for anyone who is importing into the EU on exactly what is considered a parasite and what is not allowed to be imported. I wonder if you can clear that up?

Chris Leftwich (Fishmongers' Company, UK). The simple answer is I cannot actually give one, because it is like many of the decisions which come via the European Directives — they are highly non-specific. The requirement regarding parasites is that you have to search for parasites visually. In the UK we have a presumptive standard of not more than 3 parasites per 7 lb (3 kg) of flesh. That was a recommendation by the Torry laboratories that we have re-endorsed through the Sea Fisheries Industry Authority, but it is very open-ended. It is like I said with regard to histamine. It states you must take nine samples from a batch; but what is a sample, how big is a sample, and, because histamine levels are not consistent throughout a fish, where do you take it from in a fish? It is a very difficult but where you have particular problems, you have to agree between yourself and your customer exactly what is an acceptable standard. I do not see any other way around that.

If the problem that we are talking about in Germany was the herring worm, it was *Anisakis*. Unfortunately where the public are concerned, you need only one worm and it does not really matter whether it is harmful or otherwise as the public is quite squeamish and will not eat the fish — they return the fish. I train a lot of Environmental Health Officers in the UK and I say that, if someone comes up to you with a piece of fish with a worm in it, just placate them and do a public relations exercise. Get the fishmonger or fish supplier to exchange it and try to calm them down and explain to them that it is not a serious problem — if you ate the worm you might actually get a value-added product! You could get a little extra protein in it. It is a difficult one.

Unidentified speaker — Question to Chris Leftwich. We know that the requirement to comply with these regulations is quite a burden on companies and we hear how in the UK companies were given three years to improve their hygienic conditions and systems, before the full weight of the new legislation was applied to them. I would like to know, is there any information on the numbers of companies which actually felt that it was not worth complying and therefore chose to close down, or somehow direct their resources into other activities?

Chris Leftwich. As to the actual number of companies which closed down, I do not have those figures but I am sure that they must exist. Certainly companies did close, there is no question

about that but many companies were given grants in order to assist them to upgrade their facilities.

Mike Dillon. It was 10%.

Chris Leftwich. That was probably reflected throughout the country I would think.

Chairman. Any more questions. Thank you very much for your attention this afternoon.

SESSION 4

Total Quality Management and HACCP

Chair: Ian Watson
Rapporteur: László Varadi

Current International Trends in Quality Management

Linda Nicolaides¹, Natural Resources Institute, UK

ABSTRACT

Quality Management Systems (QMS) are systems that can be used to control the quality and safety of products. The use of QMS based on the EN ISO 9000 series, an internationally recognised standard, will ensure that all aspects of a business are working efficiently and cost-effectively; and use of Hazard Analysis Critical Control Point (HACCP) will ensure that all food consumed is safe to eat. This paper considers what is meant by quality management, presents examples of how QMS are implemented and maintained and describes the benefits of such systems.

INTRODUCTION

The use of Quality Management Systems (QMS) to control the quality and safety of products will ensure that all aspects of a business are working efficiently and cost-effectively. It will provide a competitive advantage, which can increase marketing and sales opportunities; this will help a company gain new customers as well as retaining existing business. By working within a QMS the whole workforce will be involved which improves communication, morale and job satisfaction.

The EN ISO 9000 series is a specification for a quality system comprising 20 clauses and designed to be used as a guide for the quality management process of an organisation. It is not prescriptive, but allows managers to design and implement a QMS appropriate for their business needs.

Hazard Analysis Critical Control Point (HACCP) is a tool used by the food industry to ensure that all food consumed is safe to eat. It is a systematic approach to hazard identification, assessment of risk and control and is a structured approach for the control of food safety from the farm to the fork. The concept of HACCP was first introduced during the mid-1960s, when a reliable method for manufacturing pathogen-free food was required by the US space programme. It has been successfully applied in the control of safety in low-acid canned foods in the USA, and many food companies in Europe and the rest of the world have adopted the approach. Increasingly, regulatory bodies have recognised the usefulness of this tool and it has been incorporated into legislative requirements by the EU, the USA, Canada and Australia.

Total Quality Management (TQM) is a pro-active system that controls all stages in the life of a product, taking into consideration quality and safety. The system should be company-wide, involving all members of the appropriately trained workforce. The system is documented so that it can be audited internally, to verify that the system is in place, and externally by third-party auditors, by customers or for certification purposes.

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APPROACHES TO QUALITY

The traditional view of quality is that any improvement would be expensive to introduce and maintain; it is a reactive culture — if something goes wrong during production then everyone rushes around to save the product (fire fighting); items are manufactured to meet acceptable quality levels, working to achieve and conform to these levels. If something goes wrong the blame is, of course, levelled at one or a group of the workers. To make sure a product fitted in to the required quality or safety level, there was a system in place to check a proportion of production for errors or faults. This includes end-product testing where only a small percentage of product is tested to check it conforms to both safety and quality standards.

Alternatively, the total quality approach is that quality pays for itself. Any investment to improve the quality and safety of a product will contribute towards improving the company's reputation with their suppliers. TQM is a preventative system — the system is analysed and any potential problem areas are identified. Monitoring procedures are put in place to ensure that the process does not go out of control. By using TQM the system aims at a defect-free product or service through continuous improvement. Everyone in the company understands their role in the system so that meeting the customer's specifications is the target of the whole workforce. Nobody can be blamed if something does go wrong, as workers would have received training and would be able to act promptly to bring the process back into control. TQM ensures that production is right first time and every time, and that the customer receives the product when required and at the right cost.

Table 1: Causes of failure in quality

Cause	% of total
Human error	12
Bad inspection	10
Bad specifications	16
Design faults	36
Poor planning	14
Other	12

Human beings are not infallible however, if personnel have received the right amount of training for their job and they are working within the system, errors will be minimised (Table 1). If a problem does occur then this can be very costly to a company (Table 2), for example, if the problem was serious and human life was at risk, the company may become bankrupt and go out of business. Certainly, if a specific brand is linked with an outbreak of food poisoning, then sales will drop and considerable re-advertising of the product, coupled with investment, will be required in order to win back the confidence of the public.

Table 2: Cost of failure from outbreaks of *Salmonella*

Year	Country	Product	Cost in USD
1964	UK	Corned beef	163 000 000
1973	Canada	Chocolate	58 000 000
1976	USA	Cheese	251 000
1982	UK	Chocolate	248 000
1985	UK	Powdered milk	37 000 000
1985	USA	Pasteurised milk	27 710 000

A layman's definition of quality is meeting with the customer's specification, on time, every time, at the right cost. This ensures complete customer satisfaction.

ACHIEVING QUALITY

How can quality be achieved? First a company needs to satisfy a customer's needs. Discussions need to be held to find out exactly what quality they want, so that the product is manufactured to meet these requirements, then:

- Aim to do all jobs right first time: spend time planning production and ensuring that all raw materials meet with your specifications.
- Agree expected standards of performance with the workforce and monitor these standards during production.
- Recognise achievements of the company and the workforce.

It is important to eliminate weaknesses in a factory. A change of working culture will be necessary — and this needs to be done sensitively — and can be achieved by consulting members of the workforce when procedures and work instructions are being prepared. If they have contributed to the production of their new work instructions they will feel confident in using them.

All members of staff should receive an appropriate level of training so that they are able to:

- **evaluate** a situation
- **plan** their actions to fully achieve their objectives
- **do** – be able to implement the plans
- **check** that objectives have been achieved and
- **amend** as necessary, i.e.
- take **corrective action** if targets are not being met.

EN ISO 9000 series

The EN ISO 9000 series are a set of internationally recognised standards that can be used as a guide to implement QMS. Once the documented system has been implemented into a business, it can be assessed by external auditors to achieve registration to either EN ISO 9001, 9002 or 9003. The difference between the three standards relates to the type of QMS required by the business:

- ISO 9001 is the most comprehensive of the systems and requires compliance to the 20 clauses of the standard.
- ISO 9002 does not include the clause dedicated to product design control. This standard is commonly followed by food processing industries that do not spend time in developing new products.
- ISO 9003 is used by service industries and in general conforms to six of the clauses included in ISO 9001.

Quality Management Systems

Quality Management Systems (QMS) should be designed to be user-friendly and support to the day-to-day work of all members of staff. A documented system will confirm that a company does what it says it is doing. Seeking external certification is a practice

confirmed by a registration body; examples of internally recognised registration bodies include The British Standards Institute, Lloyds Register QA (Quality Assurance) Ltd., DNVQ (Det Norske Veritas Quality Assurance Ltd.). Additionally there are often national or regional registration bodies that can provide local support in implementing QMS.

Hazard Analysis Critical Control Point

Hazard Analysis Critical Control Point (HACCP) is a systematic approach to food safety and covers all stages of food production, from the farm to the fork or, in the case of fish and fishery products, from the water to the spoon/plate, and is a requirement by law in some countries. HACCP systems for all products manufactured fit quite logically into clause 4.9 (process control) of the ISO QMS, with support information for the product being included in several other clauses, e.g. customer specifications in clause 4.3 (contract review).

By using an HACCP system the limitations of traditional quality control (QC) methods will be eliminated. There is pressure from both the consumer as well as internal legislative requirements for food producers and manufacturers to supply safe food. Benefits from the implementation of HACCP systems can be summarised:

- It is a systematic and thus a preventative system — potential hazards can be identified and monitored before they occur.
- Such a system will provide confidence both in the product and to the consumer.
- Resources are used more efficiently and by reducing losses, the system is more cost-effective.
- Under the Food Safety Act, published by HMSO in 1990, a working HACCP system can be used as part of 'Due Diligence Defence'.

IN SUMMARY

A safety system based on the HACCP concept is increasingly becoming a legislative requirement for food producers worldwide, whilst certification to EN ISO 9001/2 is optional. It is recognised that HACCP systems strengthen QMS based on the international standard. A well-documented HACCP system will facilitate regulatory inspections and when used within the ISO 9001/2 framework will demonstrate management commitment to both product safety and quality.

SELECTED QUALITY STANDARDS

EEC (1993) Council Directive 93/43/EEC. The Hygiene of Foodstuffs, Official Journal of the European Communities, July 19, 1993, No.L175/1-11.

HMSO (1990) Food Safety Act. Her Majesty's Stationery Office, London, UK.

ISO 9000-1 (1994) Quality management and quality assurance standards – Part 1: Guidelines for selection and use.

ISO 9000-2 (1993) Quality management and quality assurance standards – Part 2: Generic guidelines for the application of ISO 9001, ISO 9002 and ISO 9003.

ISO 9000-3 (1991) Quality management and quality assurance standards – Part 3: Guidelines for the application of ISO 9001 to the development, supply and maintenance of software.

ISO 9001 (1994) Quality systems – Model for quality assurance in design development, production, installation and servicing. British Standards Institute.

ISO 9002 (1994) Quality systems – Model for quality assurance in production, installation and servicing. British Standards Institute.

ISO 9003 (1994) Quality systems – Model for quality assurance in final inspection and test. British Standards Institute.

Introduction to HACCP System Development

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ABSTRACT

Fisheries enterprises worldwide have been facing the challenge to achieve recognised international food safety standards. Pressure has mounted since the Food and Drug Administration (FDA) formally required Hazard Analysis Critical Control Point (HACCP) systems within their domestic and export group, and the EU has also been seen to enforce HACCP requirements for fisheries enterprises. The growing recognition that HACCP systems must be formally verified has demanded clarification of both Government and industry procedures for ensuring and monitoring safe food production. The cost of implementation and maintenance of these systems has also been a major obstacle to effective implementation. Companies currently confuse the need to upgrade the supporting infrastructure of the factory with the actual cost of implementing HACCP control systems. This paper reviews the current status and problems facing industry and discusses the cost implications of implementing HACCP systems based on work being undertaken in Canada and Africa.

BACKGROUND

The Hazard Analysis Critical Control Point (HACCP) system is the risk assessment approach which has been adopted by many food organisations. It is the recognised control system for ensuring food safety by identifying hazards and developing preventative measures for their control. This approach was successfully developed in the USA in the 1960s by food processors in collaboration with the US national aerospace programme; the system combines principles of risk management, quality control and food microbiology. After successful application in the food sector by government safety officials, research scientists, quality assurance personnel and international expert committees, HACCP is now being applied to all food operations. The system is increasingly being employed worldwide and the concept has been adapted for use in the home and in developing countries (Lima dos Santos, 1996). HACCP is primarily a prevention rather than a cure approach which is well suited to achieving cost-effective delivery of quality products at agreed prices and reasonable variety (Boggiano, 1993).

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HAZARD ANALYSIS CRITICAL CONTROL POINT SYSTEMS

Current status

The status of HACCP implementation within the fisheries sector worldwide was reviewed by Lima dos Santos in 1996 and was depicted as healthy in respect to systems actually in place especially in developing countries. Control of HACCP systems in many countries has been handled by competent authorities that are still operating traditional fish inspection programmes. The change in requirements within HACCP, which have demanded a much greater role for the operator and a more detailed analysis of the food safety system than end-product inspection previously provided, has resulted in countries and companies being delisted by trading partners, e.g. the EU or purchasing companies.

The need for a more formal verification of HACCP plans has resulted in an expansion of third party bodies who are offering to verify these plans for industry. One sector of Australia has designated the role of third party audit of food safety systems to a non-government agency. Discussions in Japan have also been held which may move the HACCP inspection of food product to a third party certification body.

In addition to establishing control, the HACCP must be based upon a system of pre-requisite programmes which can include good manufacturing practice (GMP) and good hygiene practices. These supporting programmes are company-specific and will be the basis of the effective control procedures which HACCP needs in order to function. The type of documentation required is similar to any system, i.e. policy, procedure manuals, work instructions and effective records, many of which may be absent or poorly designed (Dillon and Griffith, 1996).

A critical examination of the organisation must be made by a suitably balanced team to identify hazards, assess risk and implement control, monitoring and corrective action procedures. HACCP principles have also been widened from primarily microbial hazards to readily applied chemical and physical (foreign body) prevention or control systems. This has been achieved using the same system of possible hazard analysis, followed by identification of effective controls, and implementation of those controls. Some companies are further developing the system into a quality HACCP based on the same principles, with previous quality problems and customer complaint analysis being used as a basis.

Overview of current application

The HACCP system has been tried, tested and modified over a 30-year period; the seven principles which form the basis of the system have been adopted by Codex since 1993 as the accepted bedrock for management of food safety. Internationally HACCP has been widely incorporated within food legislation: in 1993 the EU included HACCP within the fish-specific EU Council Directive 91/493/EEC and further explained the application within 94/356/EC. America has recently (from 18 December 1997) incorporated the HACCP system within their fish regulations. The leading exponent of their application of HACCP principles in seafood production has been Canada with the implementation and enforcement of their HACCP-based Quality Management Programme (QMP) of 1992 adopted by 1200 companies (McEachern, 1997). Currently Canada is amending their QMP based on recommendations from a variety of review bodies including the EU, International Review Panel (IRP) and by internal feedback.

PRINCIPLES OF HACCP

A review of the seven principles of HACCP is provided; typical and current problems faced by industry are discussed.

Principle 1: Conduct the analysis

The authors believe that this is the principle which has caused most concern to industry and regulators alike — its achievement will involve a review of hazards and risk, and the determination of control measures by a suitably qualified team or individual. Often planning the system review, and development and implementation are omitted as the business plunges headlong into the technical aspects of identifying hazards and upgrading control systems. HACCP is fundamentally a management system and as such requires integration into the existing control systems operating within the business.

- **Determination of significance.** The assessment of hazards is fraught for business and Government alike, as little established standard methodology exists either for assessing the effectiveness of a given control measure or predicting the probability of success or failure. Formal risk assessment was initially advocated but the more pragmatic but realistic 'likelihood of occurrence' philosophy is now becoming recognised.

The decision on the significance of a given pathogen is the output of one element of analysis — risk assessment. The stages in determining significance will involve hazard and risk characterisation which, in turn, involve severity and probability evaluation. When analysing potential hazards, the determination of significance is one of the major stumbling blocks facing industry and this will enable the correct focus of limited resources through HACCP. This positive benefit is difficult to achieve if appropriate information is unavailable.

- **Likelihood of occurrence.** Overall, an improved approach, which could be used by industry, is to collate internal company failure statistics, evaluate any findings from their trade associations, review relevant epidemiological data and then finalise the design of their control system. A recommendation was made to focus the design of the control on the effective achievement of a specific food safety objective (FSO). This change of focus of HACCP plans to recognised FSOs has been supported by other organisations including fisheries services in New Zealand and Australia. Dillon and Griffith (1995) and Mortimore and Wallace (1994) also recommended using planned approaches to designing and implementing HACCP systems firmly embedded into existing company control systems.

Principle 2: Identify critical control points

The use of the Codex standard logic comprising four questions has resulted in confusion by some users, and the reporter to the Codex committee has explained the use of the decision tree. The tree is only an aid to determining critical control points (CCPs): judgement and experience have been recognised as suitable alternatives. Many small businesses become confused or concerned when using the tree. An alternative approach and the American question "If I lose control will a significant health hazard occur" is useful in provoking thought and focusing on the issues.

The logical and systematic approach, forced by use of the Codex tree, must be achieved in any alternative approach. Whichever approach is used, the authors recommend that the decision and rationale to determine CCPs and control recognised hazards through

GMP are carefully recorded, or give valid reasons why the hazard has been excluded from the company control programme. Careful recording of reasons for inclusion and exclusion provides both transparency during audit and the basis for annual review or modification as new information arises.

Principle 3: Determine critical limits and target values

The point at which a given hazard is deemed unsafe is managed by encapsulating the control within given critical limits. This principle causes problems to industry when defined standards for processes do not exist and critical limits are to be established by individual plants. The ideal situation is reference limits, established by a recognised body and accepted by Government. Thermally processed foods, such as canned or pasteurised food products, have their FSOs defined and their controls are known and tested. It is much easier for industry to modify and adapt a known critical limit than to create one.

Principle 4: Establish a monitoring system

Monitoring is the observations or measurements taken to ensure that a given preventative measure is implemented correctly. This will focus on the critical limits designed for given CCPs and normally measures target values well within the limits to prevent loss of control. A common example would be the measurement of temperature in a heat process whose critical limit is achievement of a minimum 70°C: the actual target value monitored may be a minimum 75°C to provide tolerance within the measuring system. This allows a suitable margin for safety and for variation in reading temperature within probes and between measuring systems. Alternatively, data may be visual observations made at agreed frequencies to monitor a given limit.

Principle 5: Establish a corrective action system

Corrective action should take place if a deviation from a given limit is noted at the monitoring stage. Such action includes holding the product for further investigation, rejecting the product and downgrading it for sale at a reduced price, or reprocessing the product if possible. Either one or all of these actions may take place as well as other specific corrective actions not described. The focus of corrective action is to prevent recurrence; this element of the food safety system requires analysis of the problem to prevent recurrence. Little detailed corrective action occurs, i.e. the system is normally fixed and no analysis of the root cause of the problem is given. This happens because companies do not develop formal procedures with agreed actions for deviation from given limits.

Principle 6: Establish verification procedures

The company must verify that a given food safety plan actually works. Validation of the design of the food safety system is therefore an essential step within this process; this may involve ensuring a given heat process or preservative has the desired effect on the target organism. Theoretical information obtained from a literature review may be tested by trials or by using modelling software. Further steps in verification include an overall review of the finished plan to ensure all aspects have been completed and are effectively in place.

Principle 7: Establish effective documentation and record-keeping

The design and maintenance of a useable documentation system is often problematic for many traditional fish processing companies. Paper systems have been avoided and the

only records kept are normally transaction based. Increasing emphasis on the business to demonstrate legally that it is in control has forced record-keeping upon the factories. The market can insist on, and the enforcement agencies are increasingly demanding, evidence that the factory is in control.

VERIFICATION AND VALIDATION

Many countries have now adopted a food control system based on HACCP, and industry and Government are clarifying their roles within the verification process. All systems require verification, particularly safety systems, i.e. checking for compliance by the processor to his, or his customers', system or legislation. A key component of verification is validation which confirms that the system is effective in providing the required assurance of food safety — and quality, if that is a goal. A variety of food safety systems have emerged worldwide whose 'equivalencies' have yet to be verified to enable trade.

- **Verification** can be defined as methods, procedures or tests, additional to those used in monitoring, to determine if the HACCP system complies with the HACCP plan and/or whether the plan needs modification or review. Microbiological testing may be used in verification.
- **Validation** can be described as an element within the verification process which ensures that the initial design of the food safety system is accurate. One of the major principles within the development of food safety systems is an assurance that they are properly designed, implemented and reviewed.

Equivalency and transparency of control systems has been a major issue of recent international conferences: a conference was held in Toronto (September 1997) to address these issues; effective design and development of systems was covered at a United Nations working party (1994) in Vancouver. The role of Government in validating HACCP systems was discussed at an expert meeting hosted by WHO/FAO (June 1998) and the role of industry was discussed at the Amsterdam HACCP conference (June 1998).

An issue of concern to fisheries enterprises will be the problems affecting small businesses expected to develop, operate and verify control systems.

INDUSTRY AND GOVERNMENT ROLES AND ACTIVITIES IN VERIFICATION

Industry is responsible for ensuring that a given food control system is properly designed and operated (steps 1 to 3); the role of Government is outlined in step 4 (Dillon and Griffith, 1997).

Validation of critical limits – Step 1

This is the scientific or technical process to ensure that critical limits are properly designed; it may be complex and require a high technical input to review that the proposed target values are, or will be, adequate to control a given hazard. Codex has suggested that validation involves obtaining evidence that elements of the HACCP plan are effective. Food safety plans are intended to be plant- and process-specific, and validating their effectiveness may encompass a range of activities. In their one-day workshop on 'Verification of HACCP' (part of the annual Food Safety and HACCP Forum in Noordwijk, the Netherlands, in February 1997), Pierson and Hudak-Roos

divided validation into two aspects — one theoretical and the other practical observations — to confirm that the limits set can achieve the desired FSO.

When designing these critical limits for effective control, theoretical considerations may require extensive research, trials and eventual validation through microbial challenge testing or the use of appropriate microbial modelling software such as Micromodel or the Food and Drug Administration (FDA) pathogen modelling software. Alternatively, the theoretical time/temperature effect on a given organism to achieve a specified objective may be made on paper (theory) and evaluated in practice by the above tests without involving challenge testing. The ability of the small processor to undertake validation of a high-risk process is unrealistic.

Although delegates from industry, attending the WHO and Amsterdam meetings, presented the view that validation is primarily the role of industry, small businesses may not have the expertise or equipment to validate their systems. The increased use of generic plans for sectors as reference guides should become accepted practice as it offers a guidance document for validation data.

Confirmation HACCP plan works – Step 2

Step 2, the confirmation of operational compliance with the HACCP plan, involves the additional checks to demonstrate that a given plan will operationally deliver the control required within the critical limits. Confirmation may be focused on the control system exercised within the defined CCPs or may be targeted at the assessment of key pre-requisite programmes (PRPs). This step involves ensuring the HACCP plan is correctly followed, key records are available and maintained, process deviation system is functional, and the corrective action system encompasses immediate control of non-conforming product and future preventative action.

➤ **Evaluation of related control programmes – PRPs.** Pierson and Hudak Roos documented their approach to verification of HACCP systems, including the relationship with supporting PRPs. Example activities, suggested to verify these PRPs (e.g. raw materials, goods inwards, storage, equipment maintenance, hygiene/sanitation etc.), included checks on documentation, specific supplier visits, sampling of incoming goods, and testing — using agreed microbial, chemical or physical checks. Hygiene programmes are often crucial in supporting HACCP plans for high-risk areas and verification may include assessment of the efficacy of the chemicals, training records, competence of cleaning crew, review of microbial records for end-product testing, analysis of routine environmental swabbing, etc. (Dillon and Hannah, 1997). Additionally, stool-testing, water safety and control of sanitary zones may also require verification. Verification of a given pre-requisite programme is therefore specific to the operational practices used by the company.

➤ **Verification of CCPs.** Verification of individual CCPs within a HACCP plan will be specific to their documented plan, agreed critical limits and supporting control measures. Activities can therefore include assessment of calibration of monitoring devices or control systems, sampling programmes, analytical methodology, and management action for deviation. Testing of products and raw materials may decrease as the company HACCP plan demonstrates that the system is functional and effective, but it will never be eliminated.

Re-validation – Step 3

The plan itself will require re-validation on a scheduled basis to ensure that the design is still appropriate. Additionally, any change to a key parameter will trigger review and re-validation of the plan if required.

Government verification – Step 4

Government verification is a key issue. Current interest is focused on mutual recognition agreements and memoranda of understanding which recognise a Government's ability to ensure 'equivalent' systems of food control. Increasingly standardised inter-government verification systems will ensure transparency. The National Advisory Committee for Microbial Criteria in Foods (NACMCF, 1992) has previously described the role of regulators within verification.

The key activities involve a similar approach to industry but will ensure legal compliance:

- development of specific regulatory verification procedures and tests
- development of verification schedules
- review of plans, records and deviations
- visual inspection to ensure that the system is in control
- random sample collection and specific analysis
- review of critical limits — verification and validation.

COST IMPLICATIONS AND COSTING APPROACH

A major concern of any enterprise is the cost of implementing their systems: currently little formal work has been undertaken on costs to implement effective systems. Claims have been made that the cost is minimal; it may even be positively beneficial to the organisation (Boggiano, 1993). Pilot work on costing losses and control has attempted to develop a methodology to capture the cost of ideal control and benefits to be achieved through minimising losses. The initial work concentrated on developing an approach and methodology to the cost of given controls, e.g. cleaning programmes and temperature control programmes. Formal requirements for sanitation systems are in place to supply both the EU and the American market. An analysis of failures within the Canadian seafood sector demonstrated that over 50% of the causes of plants which failed inspections could be related to sanitary control.

The costs to operate a food safety system are often not well defined and the methodology is poorly established. The food industry is under increasing market and legislative pressure to achieve improved food control systems. African fishery businesses have lost heavily through poor control, through either rejected or downgraded products, but are resistant to change for fear of increased costs. Early work undertaken by the Natural Resources Institute (UK) identified the need for accurate prediction of the cost of a given control.

The recent decision to reject the export of Nile perch from Lake Victoria, because of problems associated with cholera, and the previous negative comments from the EU audits of both the competent authority and the factories, has increased the relevance of this work within the East African region. The need for a practical approach to costing was agreed as much of the work was being undertaken in small businesses, with poor record-keeping systems, in developing countries.

➤ **African work on evaluating cleaning systems**

The approach to establishing methods for capturing costs, assessing accuracy and producing finished cost predictions is provided using cleaning and time/temperature control as the reference point. The project work, undertaken in factories throughout Uganda, has been successful in obtaining realistic cost data from initially suspicious factories. The development of an effective steering committee involving industry, advisors and the international project team has been a key factor. The commitment of the local group is reflected in the increasing management role of the steering group combined with an associated interest group consisting of the Bureau of Standards, the university and other East African countries.

Results to date demonstrate that effective control is often achieved without the need for increased expenditure. The use of statistical process control techniques as a routine monitoring tool is proving beneficial in reflecting the practical cost of control to the operating factories.

Key outputs are:

- Protocol for sanitation data collection
- Protocol for collection of time/temperature data in the chain
- Development of monitoring methodology using statistical process control charts
- Verification techniques for existing methodology
- Overall percentage profiles of expenditure on labour and materials per tonne are given.

Next steps:

- Industry will now monitor cleaning performance using developed control charts
- Budgets will be set up and reviewed for key resources
- Documentation of standard operating procedures in user-friendly format.

➤ **Canadian work on survey and software tools**

In the Canadian benchmarking exercise a software tool was also used in conjunction with a further detailed survey method to further analyse and baseline the costs involved in operating aspects of their control system. This approach has been converted into a defined protocol with each step explained. The software tool is currently in use in Canada and Africa.

Initial results are:

- A defined standard was developed and approved for use in benchmarking
- Standard survey tools were developed and tested
- A number of plants were 'benchmark' and found to have similar gaps in their system
- Value of the benchmarking exercise was reported by industry and the inspectorate
- Specific methodology for validating and verifying the benchmarked sanitation system was produced
- Cost profiles to achieve given benchmarks are currently being collated.

CONCLUSIONS

- Industry and Government are realising that effective food control systems require shared responsibility in aspects of their design, operation and verification. Governments are required to set the overall limits within which these systems operate, and industry must design and operate food safety plans which meet these limits.
- Verification has been poorly addressed by governments and industry. Confusion exists about the meaning of the words 'audit' and 'verification' both in the US and other countries as seen by discussion in Amsterdam (International Food Safety, 1997).
- The role of audit, agreed verification procedures and tests are of increasing importance; the relevant skill sets required by food 'inspectors' will therefore need to be redefined and any modifications to training programmes or university courses will need to be agreed at national and international level.
- Overall HACCP can be seen to be moving forward within the fisheries sector but not without some resistance from Government and industry. Lima dos Santos (1996) reviewed the current status of HACCP implementation within the sector, reporting the increased number of countries with fully operational and approved HACCP plants.
- The barriers to effective implementation were further discussed in Dillon and Griffith (1997) and Dillon (1998). Food safety systems are not always effectively designed or implemented because of resistance to change, lack of commitment, limited resources and increased training requirements.
- Industry often fears the cost implications in achieving new standards and commercial benefits have not been measured or promoted when adopting the new preventative approach.
- Work in Uganda has resulted in increased awareness and understanding of key control measures, including their costs, and as a result, more effective control has been achieved. Work in Canada has mirrored the African experience with significant benefits reported from project work and progressive benchmarking of the process of implementing HACCP systems.
- The provision of tools, which enable industry to measure the true cost of operating their existing controls, has provided a more realistic basis on which industry can evaluate the costs and benefits of improved controls.
- All business relationships are built on trust but entry and survival in the current market demands verification.
- Management systems are constantly changing — HACCP demands change but the benefits outweigh the costs.
- Finally, measure what you have, plan to improve and use the savings to build HACCP!

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Providing Training in the Management of Quality for Industry

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Ib Kollavik-Jensen and Hector Lupin, FAO, Italy*

ABSTRACT

Quality is a key word now more than ever in the trade of fish products worldwide. Major markets have imposed regulations covering the placement of fish products on the market that are designed to ensure consumer safety. The EU and the USA have adopted the Hazard Analysis Critical Control Point (HACCP) approach. However, HACCP is just a part of the management of quality in fish products for diligent food processors. These processors will also be faced with good manufacturing practice, pre-requisite programmes, standard operating procedures and auditing/verification and will need training in all of these areas. To a company however, the bottom line is profit, and thus the training in quality management at the company level has to include aspects as to how any investment in quality impinges on profit and how best to make investment decisions about quality that will maximise profit. It is also important to recognise that obtaining the skills necessary for proper quality management is not completed in three or five days during a training activity, but is an ongoing process where skills' development matched with dynamic management is a key factor.

INTRODUCTION

In Europe, the value of fishery imports and exports (including intra-regional trade) has tripled from 1984 to 1994 (FAO, 1996). Most of this trade involves the industrialised countries of Europe: members of the EU and the European Free Trade Association (EFTA). The transition countries of central and Eastern Europe are now increasing this share, but face several constraints in the drive to maximise the return for the fishing sector.

Among the major constraints are difficulties in achieving the level of product quality demanded by the export markets, including industrialised Europe and North America. A lack of technical information, know-how and expertise often translates into quality defects. These, in turn, result in the loss of foreign exchange earnings because of

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² Mike Dillon is a Director of Mike Dillon Associates Ltd. and Midway Ltd. He has worked over the last 20 years in various areas of the food sector including food service, research and manufacturing. Research and consultancy experience was further developed within the university sector (Humbly Grove - School of Fisheries) where the main research area was quality assurance and HACCP. He had a major role in developing and delivering MSc programmes in food inspection and control and quality management. His present companies provide practical support in factories to achieve standards through development of cost-effective control systems.

rejections, import bans and low prices for exports in key markets. Upgrading the skill base within these companies then becomes essential.

WHAT IS QUALITY MANAGEMENT?

The major export markets of the EU and North America have introduced legislation to ensure product safety for consumers, requiring exporters to 'harmonise' their production facilities and procedures with those of the EU and/or North America. Legislation focuses on the safety aspects in the main, forcing exporters into using quality assurance tools to comply. These tools are centred on the Hazard Analysis Critical Control Point (HACCP) approach. This approach is, however, one tool in the technical know-how necessary to ensure total product quality (including safety) for consumers. It must be seen and implemented as part of a total system including plant design, hygiene and cleaning, training and good manufacturing practice (GMP).

These 'pre-requisite programmes', i.e. hygiene and cleaning (Standard Sanitary Operating Procedures, SSOP), storage plans, incoming goods, etc. are the necessary building blocks upon which HACCP is built. There is no point in trying to implement HACCP in a plant without first implementing these basic programmes.

WHY DOES INDUSTRY WANT TRAINING IN QUALITY MANAGEMENT?

The reasons that companies decide to make the significant commitment to training their staff are varied. It is hopefully part of a human skills' development programme that benefits both the staff member and the company. In the case of training provisions in quality management (and this includes discreet training in what could be considered parts of a quality management programme, for instance, in application of HACCP), the reasons would include some, or maybe all, of:

- compliance with law, e.g. 91/493/EEC and 21CFR Part 123
- pressure for improved quality from many sources
- customer requirements
- need to reduce loss/waste in factory
- need to reduce recalls and customer complaints
- need to be competitive/increase profits.

Providing training at the industry level in quality management poses several problems. As mentioned above, it is definitely not just the application of regulations — and there are enough of these within EU legislation to make compliance difficult. There is also confusion about the roles of hygiene and HACCP in managing safety within plants, and this is often open to discretionary judgement at the plant level. HACCP-based regulations are aimed only at safety, which often creates confusion at the production level since it overlaps with other aspects also regulated by law, e.g. spoilage or labelling, for which HACCP is not required. Companies are definitely interested in knowing what are the economic advantages of applying quality management systems, how to measure them and how much it will all cost. Training should, therefore, be adjusted accordingly, taking into account all these factors.

INDUSTRY-FOCUSED TRAINING

Firstly, the training course should be considered as the start of change in the company and not an isolated event that will solve all the problems in the two or five days of the

course. Introduction of quality management into a company will be a long process and will take a commitment from senior management to invest in skills' development, the necessary plant and equipment improvements, and changed systems.

There are several routes that can be taken with industry training. An example is company-specific training, where a single company brings in trainer(s) to provide instruction and develop systems for that company. There can be significant periods between visits to allow implementation of any recommendations or changed systems, but the relationship is an individual one, normally over months or even years. Another type is the stand-alone course option where participants attend a course of a predetermined length, e.g. a three-day HACCP principles' course. This latter type is the focus of this paper, though much of what is said is applicable to both types. The design of any course could follow a four-phase approach.

Design of the course

This should take into consideration the perceived needs of the participants. Of course, if the participants are known beforehand, they can be asked directly and their needs can then be addressed in the course. Quite frequently however, the course is designed around the perceived needs only and, in these cases, runs the risk of being slightly wide of the mark. However, this can be accommodated for and will be discussed later. Several aspects of design need to be considered:

- **Course content.** The technical aspects of quality management need to be covered — GMP, hygiene, HACCP, legislation, ISO 9000. The importance of these contributing components will vary with the course goals. It is also important that the costs and investment needs (in capital and human resources) are covered, as these aspects are key factors in any company policy on implementing quality management.
- **Course delivery, location.** The location for the course needs to be close to the industry that is being helped. In most quality management courses, this will be close to fish landing and processing areas. It is important to be able to visit local factories and other related sites, e.g. ports.
- **Duration.** The duration is mostly dictated by the content and would normally be one or two weeks, but can be less if select components, e.g. HACCP or audit, are the only topics being covered.
- **Delivery team.** This could comprise any number of fully qualified personnel, from a single instructor to a team of three or four. Ideally, a local person should be involved, but this is not always possible. A mix of lecturers can help relieve any monotony that may occur with one lecturer and also recharges the batteries of the other.
- **Training material.** It is best that participants are provided with handouts and printed material. This allows participants more time to listen. There is much relevant and published material available that is ideally suited to courses in quality management. The rapidly increasing number of web sites on the Internet devoted to quality issues such as HACCP gives a multitude of choice for course material. Institutions such as the Food and Agriculture Organization (FAO), Food and Drug Administration (FDA), National Advisory Committee for Microbial Criteria in Foods (NACMCF) and Codex Alimentarius have published material relevant to this topic. Furthermore, there needs to be a certain amount of tailoring for each course and this will require development of individual handout material.

- **Flexibility.** The course needs to be able to adapt to changing circumstances during the actual course. In some cases, especially where the audience skill level is unknown, it becomes apparent that some aspects need to be covered in more or less detail than originally planned. In more radical situations, complete sections can be dropped in order to focus on areas that are more important to the participants. For instance, a whole day devoted to the seven principles of HACCP (see previous paper) may be reduced to a couple of hours when the lecturers find the audience is familiar with the principles but not on the practical implementation in the factory. In these cases, the practical sessions may be started earlier, or the sessions on auditing may be extended. Therefore, it is important to come to a course with extra material, just in case.

Delivery

Courses need to be varied in the method of delivery, and therefore a mix of lectures, videos, group discussions and practical sessions is essential. The key word here is participation — this is very important when providing training in implementation of quality systems. An ideal scenario would be that a local processing factory is visited, and the participants then develop a quality system based around what they have seen in the plant.

A five-day course on quality management, with practical sessions playing a large role is shown in the box opposite. The course is delivered by three or four lecturers, and the participants learn through lectures, videos and group discussions. An important part of the training element for the targeted industry personnel is the practical sessions where the participants visit a local fish processing plant and then use one or more processing lines as the case study. The participants are divided into groups of three to five and each 'team' develops an HACCP plan and an SSOP plan for the factory. The plans are left with the participating factory. Auditing the plans by the other groups can also be introduced, and this cross-checking will foster considerable interaction during the course.

A key element of the course is the inclusion of a session on what the next steps are for the trainees when they arrive back at their plants. Hopefully the hands-on experience of developing HACCP and SSOP plans will give the participants the confidence to implement the same in their plants. However, as mentioned previously, any training course in quality management needs to be considered as the start of a process of change. Therefore the participants will need to be assisted in planning the next stages. This could include information about more advanced courses, and access to experts who can assist the companies during the implementation phases and assist in costing the investments necessary to undertake the process of change and, very importantly, indicating how to get assistance in sourcing the finance for their investments.

Discussion and evaluation

Ideally discussion and evaluation should take place throughout the course. It is best to determine the participant's expectations early in the course so that there is a baseline against which an evaluation can be made. This also allows the flexibility that should be built into the course design to be utilised in situations where the expectations differ from the original course plan.

Example 5-day course

The programme is outlined below, but is designed to be flexible to allow the course to be tailored to the needs of the participants

DAY 1

Overview

Current trends in world fisheries and quality management
What is quality management?
The economics of fish safety and quality

Fundamentals

Safety aspects associated with seafoods
Problems with traditional microbiological quality control

DAY 2

Basic HACCP system

Hazard analysis – Critical Control Points – Critical limits and monitoring procedures – Corrective actions – Keeping records

HACCP based regulations

Food safety regulations worldwide – EU focus
Verification procedures
Audit procedures

DAY 3

HACCP pre-requisites

Cleaning and sanitation in seafood processing
Establishments for seafood processing

Case study

Field trip to local factory – use as case study
Development of the case study for the practical sessions

DAY 4

Practical session

In group sessions, develop a draft HACCP plan and SSOP plan.

DAY 5

Practical session

Presentation of plans
Discussion (and audit) of plans

Next steps

Planning what is next after the workshop
Developing your businesses
Finding investment for your plans
Discussion and evaluation

Participants are encouraged to provide feedback throughout the course; this includes comments on delivery style and method, and on course content. It also allows future course development to learn from previous courses. A final evaluation session is essential.

Impact

The prime function for providing training in quality management is to initiate a change in company structure and systems. Therefore it is important to maintain contact with companies that have been trained in the months following to see how they are putting into practice what they have learnt. This also provides a very useful further evaluation of the effectiveness of the course design and delivery, and will feed back into the next course. And so the cycle is completed, and then starts again with the next course.

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DISCUSSION

Carmen Moraru (University 'Dunarea de Jos' Galati, Romania) — *Question to John Ryder.* Is there a suggested pattern for the HACCP courses mentioned here or were they already applied in practice or is it just an order for those who wanted it?

John Ryder (EASTFISH). No. This one is quite heavily based on the DANIDA-funded project; Hector Lupin and Ib Kollavik-Jensen have spent the last five to seven, I am not sure how many, years going around Asia, Africa and Latin America delivering courses such as these. They have a range of courses so it is based on practical experience, bringing in some of the aspects for the central European market, so a lot of it is based on practice. Each course is tailored for the needs of that area.

Carmen Moraru. What would be the cost of such training, for one trainee or per session?

John Ryder. For the Croatia workshop (see below) the charge is just USD 100. You have to get yourself there and pay for accommodation but that is at your own cost. That is at a group discount rate — it is obviously not the true cost because this is a UN project, and this assistance is at donor level. Most of the training programmes that you will get around the world now will be sponsored by some overview body. The true cost would be considerably more.

Linda Nicolaides (NRI). A two-day HACCP course run in the UK will come to around £500/£600 per person and that is a non-residential course: accommodation and travel costs are extra.

Gheorghe Stefan (Steel '94, Romania) — *Question to Linda.* You mentioned *Clostridium* in your presentation. Suppose you are a producer and you verify your products to meet with supermarket specifications. In the case that one of their customers buys our fish and next day they are seriously ill, if you have already implemented HACCP in your company, is that a protection for you?

Linda Nicolaides. It depends on when and how the hazard occurred in the food. Due diligence as a defence needs to be demonstrated by all food producers involved in the handling and preparation of a product at all stages of that product's life. Records must exist, as production records demonstrating the time/temperature profiles of the product, also records regarding heating (cooking/pasteurisation) or chilling stages. The manufacturer should also provide the consumer with comprehensive instructions on how to prepare the product for consumption: this is usually printed on the product packaging. We spoke yesterday and the day before about the Food Safety Act (1990) in the UK and 'Due Diligence Defence'. If during the production of a canned food, the manufacturer has done everything in his power to make safe food, then 'due diligence defence' can be demonstrated. However, if there is direct evidence that a product from a specific company has caused an illness, an investigation of the company's records, as well as looking at how the consumer handled the food, needs to be carried out.

In the case of the Canadian salmon *Clostridium botulinum* (type E) outbreak, *C. botulinum* spores entered the can through a pinhole during the cooling stage. Type E can grow in a can and it is well documented that the bacterium will not change the appearance of the product, nor will off odours be produced. Additionally, neither fishery experts nor routine quality assurance methods used in the factory will be able to detect any change in the product. By adopting good manufacturing practice (GMP) in combination with a logical HACCP plan, the risk of botulism will be monitored and under control. A pinhole in a can should be detected prior to filling; adequate specifications from the supplier coupled with inspection of cans before filling should prevent this problem occurring.

Gheorghe Stefan. [Raised a question on implementing HACCP in his company]

Linda Nicolaides. The reason for using quality management and HACCP systems is to produce safe food and reduce the number of incidents of food-borne illness. Food producers should understand that, providing they are in compliance with the requirements of the system, this will ensure the safety of all products that leave the plant. If a problem occurs and there is evidence

that it occurred in your processing plant, then 'due diligence defence' cannot be used. The problem should have been identified during the monitoring of the process.

Gheorghe Stefan. Yes but the probability for this toxin it is one or two million.

Linda Nicolaidis. Yes. The probability of the occurrence of the pathogen is low, however, if the bacterium is present in a food that will support its growth, then the risk is high, especially if the food is to be consumed without further heat treatment. By controlling the safety of all raw materials entering the plant (e.g. specifications to your suppliers/washing and/or disinfection stage on receipt of raw material), as well as at all stages of production, then the opportunity of a specific hazard occurring is prevented.

Mike Dillon (Mike Dillon Associates Ltd., UK). There needs to be some mechanism by which a process is actually assured; there is for thermal processes. You should be formerly registering your thermal process and therefore ensuring the actual designs are effective. So it is all about effective design. But it is how you actually register that, and that is basis of your defence.

Chairman. One last question please?

Ante Dujmušić (Croatian Ministry of Agriculture and Forestry) — *Question to John Ryder.* During the last few years I have seen a lot of manuals about HACCP presentation about other things and I have participated in several training courses. From my point of view all these courses and all the manuals were too general and wide. They focused on the wrong issues, especially as they were not organised to meet the needs of the fish industry. Despite this we have the intention to organise a course for the HACCP in Croatia. I would like to ask you, as a representative of EASTFISH and also as an expert in this field, what you think about the creation of some kind of plans for the implementation of HACCP prototypes for each production. When I talk about prototypes I mean for each type of production. For example, for my point each carp production has almost the same critical points. This could only be some kind of framework for the final plan.

John Ryder. This does exist, if you have access to the WorldWideWeb. It is usually accessible and there are what they call generic plans for various processes — the Canadians, and the Americans, have some that they put out. I can give the Internet address if anyone is interested. They give generic plans for cod processing, for salmon roe processing, shrimp processing and for white fish processing. There is, however, one danger that, if I do not mention it I will get shot by the other two speakers on the top table here, each plan is just that. It is a generic plan because you may say that the critical control points are going to be the same, but they may not be or they may be. Between processing plants it is very individual and you have to design your plan using the generic plan as a starting point, but you have to design your plan around your processing plant, your people and your product. So I am afraid there is no quick solution. This was the idea that I was trying to get across, that the five-day course cannot cover everything, for every process and for every person who is at that course. But it can maybe give a very good idea. I am sure Linda would say so as well with her course. She would then maybe go on and do follow-ups which are essential. As I have said the course is just a start, it is a start of change.

SESSION 5
The Marketing of Fish and Fish Products

Chair: László Varadi
Rapporteur: Ian Watson

Generic Advertising of Fish – A Success Story

David Cleghorn¹, Sea Fish Industry Authority, UK

ABSTRACT

This paper describes the function and role of the Sea Fish Industry Authority and the purpose of generic advertising of fish.

INTRODUCTION

The Sea Fish Industry Authority (Seafish or SFIA) was established in 1981 under the Fisheries Act. It is funded by an industry levy and receives no government money. Our role is to promote the efficiency of the sea fish industry and to serve the interests of that industry as a whole with regard to the interests of the consumer of sea fish and sea fish products.

STRUCTURE OF SEAFISH

Seafish comprises several divisions, in which the Development Division is responsible for all aspects of consumer marketing, trade development, economics, statistics and aquaculture:

- **Consumer marketing** consists of advertising and promotion, market research, marketing services such as design and exhibition display, food and nutrition advisors, consumer public relations.
- **Trade development** consists of industry, retail food service and fast food trade development. Its role is to keep the industry informed of trends and to match supply to demand at home and in overseas markets.
- **Economics** provides consultancy services to this industry, evaluates possible policy outcomes and assists in analysing likely impacts of EU legislation on the fish industry.
- **Statistics** is an important provider of key industry numbers covering fish landings, imports, exports, household fish consumption, food service consumption and family food panel information.
- **Aquaculture** is responsible for shellfish and finfish hatchery, rearing and on growing techniques and development — particularly in relation to halibut (*Hippoglossus hippoglossus*) and cod (*Gadus morhua*). It also takes part in cross-border research products.

¹ David Cleghorn is a trade development officer in the Development Division of the Sea Fish Industry Authority (Seafish) in Edinburgh, Scotland. He has been employed at Seafish for over 11 years and works with fishermen's organisations and fish processing companies to persuade retailers and food service companies at home and abroad to buy more fish. David worked in the manufacturing industry for several years as an export manager before joining Seafish. He graduated from Edinburgh University with an MA and obtained a Diploma in Export Marketing and Languages at the Scottish School of Textiles.

GENERIC ADVERTISING OF FISH

We now come to the role and function of generic advertising of fish. You may ask why do we advertise at all, and why do we advertise generically. The simple fact is that fish is in competition with other foods such as red and white meat for a share of consumer expenditure. We advertise generically because brand advertising does not increase the overall product market size, but merely increases a brand's share of its market segment. To grow a market, the only method which works is generic advertising. It is cost-effective and reaches a mass audience — nothing else comes close in terms of cost-effectiveness. Examples of previous advertising campaigns can be seen in Figure 1.

Our competitors believe that generic advertising works, as do we, because we take a great deal of trouble to measure these results. We make use of:

- Advertising pre-testing – to make sure that the adverts stand out and that they communicate the right message to the target audience.
- Advertising tracking – to track awareness during and after each campaign to ensure that we get the appropriate share.
- Monitoring – to check attitude changes before and after each phase of a campaign.
- Measuring – to measure consumption and analyse consumption patterns in a variety of demographic breakdowns to see whether advertising is having the right effect.
- Econometric modelling – to test the effectiveness of our advertising through econometric modelling, a technique which isolates the effect of advertising from the other influences on consumption.

Advertising and promotion are vitally important in supporting the industries' long-term prosperity by maintaining and constantly reinforcing positive consumer attitudes towards fish.

Fish does not sell itself. There is little evidence that social trends have helped fish. Although the trend towards healthy eating has undoubtedly benefited fish, it is important not to get this positive development out of proportion. The foods which benefit most from this trend are the easy substitutes, e.g. brown instead of white bread and low-fat instead of full-fat milk. Fish is not perceived as an easy substitute in order to benefit from the healthy eating trend, the consumer has to be persuaded that fish makes easy meals.

Generic advertising enables the market for fish in all its forms to expand. It is wise to recall that old New York advertising truism: "It's not just the message that matters but its constant reinforcement". Generic advertising is the constant reinforcement of the message. David Ogilvy, former creative head of USA Agency Ogilvy and Mather has described how to produce advertising that sells.

- Do your homework
- Then position your product
- Create personality for your product
- Make the product the hero
- Repeat your winning advertisements
- Make lots of profit.

I agree with David Ogilvy. The bottom line consists of increasing sales and bigger profits. Good generic advertising achieves both objectives.

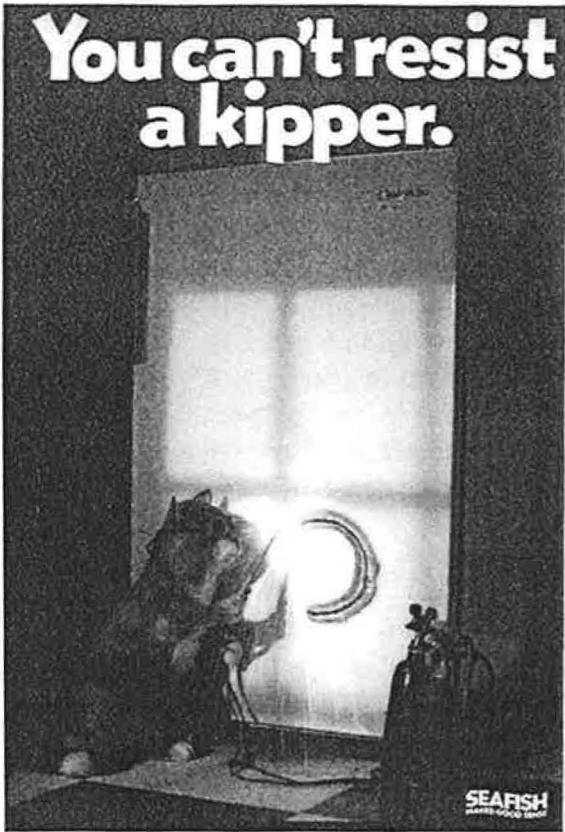


Figure 1: Examples of previous advertising campaigns (originally in colour as full-size posters or A5 size)

Development of a Marketing Concept for Fish Products

John Dallimore¹, J.D. and Associates, Germany

ABSTRACT

The development of a successful marketing strategy for products from fishery and aquaculture projects is often an under-funded and neglected issue in the feasibility study stage for new and expanding projects. The excitement of being able to produce raw material (fresh fish) seems to make project designers forget that they will have to sell it, and unfortunately this has led to many failures in both industries. The development of a marketing concept and a marketing strategy that are realistic is essential if a project is to survive, and if profit margins and returns to the investors are to be maximised.

OBJECTIVE STATEMENT AND ELEMENTS OF MARKETING

All fishery and aquaculture projects have the basic objective from their investments — to maximise returns to their investors — by the utilisation of resources available to the project, satisfying either existing demand or potential demand for the output of the projects.

Marketing can be best described as the concept where the management of a project look towards the sale of their product, rather than towards the technology of production. Why produce when you cannot sell at a profit? This has to be reflected in the original concepts of the project, and it is essential that the marketing is considered at the feasibility study stage, and is then incorporated in the company's corporate strategy. This approach is known as the four elements of marketing:

- Business philosophy
 - Marketing research
 - Marketing instruments
 - Marketing plan and budget.
- **Business philosophy.** This is the orientation of all decision-making personnel in the project to think about marketing and not to focus on production, so that the emphasis of the project is on the needs and desires of the potential consumer groups.
- **Marketing research.** Marketing research needs to be well structured and systematic in approach and should consider all aspects of the marketing mix (see below). It is important to allocate sufficient funds to market research so that the existing and potential markets for the product are clearly defined. Market research should not only focus on the end-consumers, but should also study the supply markets, e.g. that

¹ John Dallimore has worked in the fishery and aquaculture industries for all of his life, first as a fishing skipper, and then as an aquaculture analyst and project manager throughout the world. He holds an MSc in Aquaculture from Stirling University, Scotland, and a BSc in Fishery Science from Plymouth University, England, as well as being a trained manager and financial analyst. In 1997, after completing a successful contract with Selonda SA, Athens, as Director of International Operation, he established J.D. and Associates in Hamburg. The Associates are a group of international specialists who co-operate as international consultants to the fishing and aquaculture industries. Marketing is only one of the Associates' special areas of expertise.

the proposed project will be able to source the raw materials at the correct times to meet the potential demand of customers. Marketing research can be summarised as:

- Outline the project strategy – by geographical area, market share, cost leadership, differentiation and market niches. This includes current and new producers (competitors) and their levels of production, the existing marketing mix, substitute products, distribution channels, consumer and end-user buying behaviour (especially seasonal influences, e.g. summer demands for fresh fish products from tourists).
- Outline the marketing concept – the dimensions of the marketing strategy, product and target group, marketing aims and marketing strategy. This section considers the output of the project and its placement in the market to maximise the efficiency of the project. In terms of aquaculture projects this includes deciding when the juveniles should be stocked (and are they available) to meet important consumer demand peaks (highest market prices), and what the end product should be, e.g. whole fresh fish, fresh fillets, prepared meals, value-added products (smoked, pickled, tinned etc.).
- Outline the marketing methods – dimensions of the operating market, the marketing mix, marketing instruments and marketing budget. These are practical issues which are needed to achieve the marketing objectives desired by the project, and which are identified by the research.
- **Marketing instruments.** From the marketing research it will be apparent where and which marketing instruments will be necessary and which is the best approach needed to achieve successful marketing. The use of the correct marketing mix in a systematic/strategic approach will bring the optimum results in terms of market penetration and distributional efficiency. This is particularly important where small producers are attempting to enter a large market where their input is insignificant to the overall market and, hence, they will have no influence on the market. If the project is to be successful, this situation needs to be avoided by searching for the niche markets for the product, e.g. unseasonal production where supply is low but prices are firm, identifying a local market for a particular product where distribution costs are minimised, value-added processing and packaging etc.
- **Marketing plan and budget.** The marketing plan and budget is the result of all the above elements. The plan needs to be formalised and agreed by the decision-makers in the project, and incorporated in the feasibility study schedules of the project. Budgets also need to be established, not only for sales costs but also for ongoing market research, and product and market development. It should be mentioned that in times of financial difficulties, the marketing budget is often the first area to be reduced; however this is often a false economy as market and product development often lead to greater profitability.

THE MARKETING MIX

There are four key marketing tools defined by Philip Kotler (1988) which are known as the 'Four Ps' — price, product, place and promotion. They are often considered a matrix, as each has some effect on the other (e.g. whole fresh or frozen fish sold in bulk has a low market price, but also has low promotional and packaging costs, while vacuum-packed individual portions will have a much higher market price, but will also incur greater packaging and promotional costs). However, each 'P' must be treated as an independent

issue, the mix of which will optimise the efficiency of the project. The defining issue will always be the profit margin, which must be maximised. By considering the marketing mix, it is possible to estimate how best to achieve this goal, and develop the marketing concept.

The price

The price is always a function of supply versus demand. The greater the quantity available the lower the price unless the demand increases at the same rate. The reverse is also true where demand increases but supply does not: prices will increase until an equilibrium is reached where the price is equal to the demand (Chaston, 1987). The salmon market is a classic example from aquaculture where increased supply has led to falling prices, which in turn stimulated demand with salmon becoming an ordinary fish — not a luxury item — selling to a much larger market. Also, as most fishermen know, good weather and heavy landings always lead to lower prices. However, there are ways to combat, and even control, prices by creating demand. This is a function of the other three areas, but it can be designed by a marketing strategy which includes new products at competitive prices for sale in new markets.

A pricing policy usually encompasses the following key areas:

- It considers the margins required by each link in the supply chain — the shorter the chain (e.g. producer packing and processing to sell directly to major retail outlets rather than using wholesalers) increases returns to the parties involved in the supply chain. This is a growing trend in aquaculture where production can be managed, and the continuity of supply and quality is guaranteed to the retailer.
- The existence of minimum price guarantees supporting the industry and buy-back schemes normally funded by governments.
- Discounts for products, especially for new products or companies entering the market. However this is a dangerous practice as it can quickly establish a trend and depress a market. Samples are one area where lower-than-average prices can be accepted, but there should be a clear understanding of this point between the producer and the buyer which safeguards the future trading relationship.
- Financing (of the price) is often a hidden cost which has to be considered, especially when dealing with large retailers who expect longer credit terms. The market prices from retailers may well be better, and the market more stable, but the producer will have to be able to operate during this credit period and will have to make financial provisions for this. Also, this section includes other costs of entering a market, e.g. transportation, insurance, extra packaging, tariffs (especially for imports entering the EU from non-member countries).

At the end of the day, it is the maximisation of profit margins that will determine the desired mix of product and the range of prices obtainable.

The product

The product is what can realistically be produced — consider what the raw materials available are, how best to utilise them, and what consumer demand there is for the end-product. To analyse the product it is necessary to consider:

- **Product mix** is the analysis of products which are already on the market, substitute products that are also available on the same market and new products that could be added to this market's product mix. In terms of fish products, consumers are aware of different species, seasons for species and why they are buying — taste, texture, quality, freshness/frozen, ready meals etc. — but they are also sensitive to price.
- **Quality** is an increasingly important issue and has associated costs. To import into the EU and USA, all fishery products now have to meet stringent health and hygiene standards governed by Hazard Analysis Critical Control Point (HACCP) regulations. Countries like India and Bangladesh suffered poor quality products during 1997 with a complete export ban on fishery products to the EU. Consumers are also increasingly aware of the quality of products and how to detect quality from TV cookery programmes. However quality products command premium prices and give the seller more time to place the product, and so potentially command better prices.
- **Packaging and design** are increasingly important to consumers in the major markets of the EU and USA, where products that are well packaged and presented are preferred. Fewer people in these markets like or even know how to deal with a whole fresh fish, so packaging which also has clear instructions on how to prepare the meal has an advantage. Obviously good packaging, with pictures, quality standards, guarantees of satisfaction also contribute to consumer confidence. Packaging may include brand names of the producer or even the retailer, which also can increase the chances of consumers making repeat purchases.

In a summary of the product mix, it is often useful to assess the demographic mix of the consumer market. A market like Germany (Nuebaker, personal communication) has less potential for fresh fish sales than prepared meals, as an estimated 60% of the population are not married. The single person does not wish to prepare fresh ingredients, often due to work commitments, so prepared 'ready-to-eat' fish dishes and frozen fish sales far exceed fresh fish sales. In a Mediterranean country such as Greece, the reverse is true, due to the stronger emphasis on families, and a preference for eating out and socialising. Per capita expenditure on food items in these two countries is also significantly different — Germany 8% of income, Greece 37% of income. Understanding your target market, and then designing your product to fit into the market is essential.

The place

The place is not only where you sell your product (the outlet), but also includes considerations as to how it gets there and how best to optimise these issues. The key points are:

- **Channels of distribution** aim to get the product from the producer to the end-user as efficiently as possible to maximise profit margins. A channel may be self-contained 'farm gate sales', or very complex in terms of transporter, agent, wholesaler, retailers, but both methods have advantages. Here, only wholesalers and retail outlets are considered further.
- **Wholesalers** have several major advantages: they can accept and handle large volumes and can hold stocks; they can reach a wide range of outlets from large multiple retailers to small individual outlets; they often have their own transportation system; credit systems of payment are relatively simple and the need for own sales staff is limited. However, in the fish business there is a trend of larger

producers moving away from the traditional wholesaler to establishing direct sales to major retail chains.

- **Retailers** also have advantages, but selling to them needs considerably more effort on the part of the producer. Local retailers close to the producer are excellent outlets through which to sell products at normally good prices, but the volume may well be limited. Selling directly to larger retailers (supermarket chains) requires a continuity of production and quality, which may also involve processing and packaging by the producer. Prices are often higher, but this gain must be considered against the costs of meeting these requirements and the sales staff needed to maintain the service to the clients. This move towards retail sales staff has not only been seen in the salmon industry, but also the major Mediterranean producers have negotiated contracts with the supermarket chains in northern Europe.

It is concluded that for smaller producers local retailers are a must, but other sales will be channelled through wholesalers. Only significant producers can really take on direct sales to multiple retail outlets and supermarkets.

Promotion

Promotion is becoming an increasingly important area in the marketing of fish products worldwide, and in recent years there have been many innovative promotion techniques used. Fish and fish products in general have received a great deal of interest from the media, partly as a result of the intensifying political and environmental debates on a once plentiful resource, but also as health issues have gained the consumers' attention. Both are indirect forms of advertising, but the industry (both aquaculture and fishing) has taken steps to promote the eating of fish, as healthy and environmentally friendly — particularly in the case of aquaculture products. Fish sales have also received a lot of free advertising from cookery programmes on television, and through the publication of fish recipes in general-interest magazines.

However, the industry is taking no chances and producer organisations are preparing new campaigns to enhance sales of their products. Branding under a producer organisation (e.g. the blue ribbon of quality for Scottish salmon) or branding under another concept (environmental, clean, fresh, healthy) are increasingly common and used to good effect. All are designed to create the right image and personalise the product to the consumer.

Packaging also encourages familiarity of the consumer with the product, but great care is taken to ensure that the consumer sees what the product will look like when it is served. Many fish are ugly and the consumer is unsure how to prepare the meal. Good advertising, with ideas and colourful pictures help to dispel these worries and encourage sales. Sales are further helped by the development of recipe cards, which are placed with fresh products in major retail outlets to aid the consumer, complete with packet sauces to make the meal.

All of the above enhance the promotion of fish products, but the industry is keenly aware that these steps are only the beginning of the promotion cycle. With aquaculture production, especially, set to increase dramatically in the next years, the promotion of these products will become increasingly important if the current profit margins are to be maintained and the market for these products is to continue its steady growth.

DEVELOPMENT OF A MARKETING CONCEPT

In the previous sections, the key components used to analyse and develop a marketing strategy have been outlined, but not covered in any significant depth. The reader is advised to consider only the above and judge where the emphasis is needed for their own individual project. However, an excellent model was designed and published by Behrens and Hawranek (see box) which summarises the development of a marketing concept in the key steps and with the information required to complete each step in the process.

Development of a Marketing Concept (from Behrens and Hawranek, 1991)		
Steps		Information required
Step 1		
Defining	<ul style="list-style-type: none"> the product target markets target price production capability 	Existing same or similar products Market volumes and market potential Prices on markets and seasonal trends Current marketing skills and requirements Current and new channels for distribution Current outlets and potential outlets
Step 2		
Defining	<ul style="list-style-type: none"> the corporate aims realistic (SMART*) objectives desired position in markets 	Competitors strengths/weaknesses Own strengths/weaknesses Identified needs of consumers and niche markets for own product
Step 3		
Defining	<ul style="list-style-type: none"> marketing strategy market expansion market intensification market innovation market pricing market profile 	Position in market (major/minor)? Influence in the market (high/low)? Costs against competitors and volumes? Newness in market (high/low profile)? Price sensitivity of consumer Loss leader to gain entry into market Launch of brand name or product range
Step 4		
Defining	<ul style="list-style-type: none"> marketing mixes 	Product ranges to be offered and consumer groups targeted Place and channels to be used Pricing policies and realistic margins to be achieved Promotional activities that will be needed to achieve targets
Step 5		
Defining	<ul style="list-style-type: none"> marketing strategies marketing instruments marketing budget estimate of sales 	Details of strategies required to achieve marketing mix Estimate marketing costs Estimate sales revenues Estimate sales costs Include a contingency for over-spending
* SMART = Specific, Measurable (quantity), Achievable and Realistic, Time-oriented and controlled targets		

CONCLUSIONS

Marketing in the fish business must be considered as critical, since all the products (even frozen products) have a very limited shelf-life. Therefore the development of a realistic marketing concept and an achievable marketing strategy is essential. The development exercise also focuses the project decision-makers' thinking towards marketing, instead of production. Time and time again, especially in aquaculture, we have seen the development of new and innovative technology for producing fish being commercialised — but at what cost compared to the potential market price for the product. When a high value wild caught species becomes 'farmable', what happens to the market price? Ask the salmon farmers in Norway and Scotland, or the bass and bream producers in the Mediterranean. All have seen market prices fall, margins squeezed, and all have had to re-think and develop new marketing strategies. All now think — market first: production second.

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Fisheries of Georgia: Prospects for Development

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ABSTRACT

Recent economic reforms in Georgia were very painful to the fishery sector as well as to all other industries. During the Soviet period more than 3000 people were employed in the fishery industry. Overall, the fishery sector was producing more than 100 000 tonnes in the oceans, seas and inland waters; now this has decreased to 2000 tonnes. Events of the last few years have destroyed a once prosperous industry. This paper outlines the difficulties in the fishery sector, the reasons for and ways of solving these problems, prospects and development trends in new market conditions. It also gives a general overview of the fishery industry in Georgia.

INTRODUCTION

Georgia is situated in the central and western parts of the Caucasus Mountains and has a total territory of 69 500 km². On the east it borders Azerbaijan, on the south are Armenia and Turkey, to the north across the Caucasian ridge lies the Russian Federation, and to the west is the Black Sea. Georgia is located at a junction of Europe and Asia; it has access to world oceans and is the shortest route from Europe to Central Asia. The variety of natural conditions result in many different climates — there are 11 climatic zones. In the west the climate is humid subtropical (precipitation 1000–2500 mm), and in the east it is dry and moderately humid (precipitation 450–900 mm). Georgia has a wealth of inland lakes and rivers.

Within the former Soviet Union, Georgia was an agrarian industrial country with a developed infrastructure. After the collapse of the centrally planned economies in East Europe, however, it encountered hard times. Destruction of production units in all sectors of the economy sharply decreased production. Georgia changed from being a net exporter of food products to a net importer. The priority of the agrarian policy was to become self-sufficient in the supply of food to the population.

Today, in the economic reorganisation and new market economy, rebuilding is taking place. Anti-crisis measures and strict monetary policy undertaken by the Government, with the help of the International Monetary Fund (IMF), the World Bank and other donor organisations, enabled some achievements in macro-economic stabilisation. The privatisation process was initiated and inflation was stopped. The orientation of international aid has changed from humanitarian to developmental. In the framework of food security programme implementation, one of the priorities of the agrarian policy of the Georgian Government is fishery industry development, as fish is one of the main sources of protein.

The role of international organisations in solving this problem is very important. Donor organisations are not giving due attention to the fishery sector at this stage and there is

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no overall strategy for the industry. In the Government's view, the only way to help the sector to overcome this crisis is to promote foreign investment in the fishery sector and to create an attractive environment for investment.

AQUATIC RESOURCES

The Black Sea coastline in Georgia is more than 300 km and marine fishing is mostly carried out in the 12-mile zone. Georgia has many rivers (25 075) — the majority of which are short — which make up the river basin of the Black Sea (annual inflow 42.5 km³) and Caspian Sea (14.4 km³). There are some 860 natural lakes with a total area of 170 km² and some 43 reservoirs for generating hydro-electric power and for irrigation with a total volume of 3.2 km³. Renewable groundwater is estimated at 17.23 km³/year.

The inland waters for potential fish farming are:

Rivers	1424 km
Lakes	8808 ha
Reservoirs	8000 ha
Pond area	1285 ha
Hatching pond area	207 ha
Fry pond area	60 ha
Incubation shop capacity	50 million fry
Trout farm capacity	500 t/year of fish

The fish species that are used mainly for processing are: Black Sea anchovy (*Engraulis encrasicolus*), Black Sea scad (*Trachurus mediterraneus*), bonito (*Sarda sarda* Ponticus), striped mullet (*Mugil cephalus*) and whiting (*Merlangus euxinus*). There is a small amount of Atlantic sturgeon (*Acipenser sturio*), Kolkhida sturgeon (*Acipenser gueldenstaedti*), beluga (*Huso huso*), Black Sea salmon (*Salmo labrax*) etc. Fish species found in the inland waters include: wild carp (*Cyprinus carpio*), bighead carp (*Hypophthalmichthys molitrix*), catfish (*Silurus glanis*), carp (*Cyprinus carpio*), white fish (*Coregonus peled*, *Vericorhinus capoeta*), lake trout (*Salmo trutta lacustris*) and rainbow trout (*Oncorhynchus mykiss*).

SURVEY OF THE FISHERY SECTOR

The fishery in Georgia consists of three main sectors:

- **High seas fishery.** Before the 1990s the 16 vessels fishing in the Atlantic and Indian oceans caught 60 000–65 000 tonnes of fish annually. Today most of the fishing vessels have been sold.
- **Coastal fishing in the Black Sea.** This fishing fleet of 53 boats caught 80 000–120 000 tonnes of Black Sea anchovy annually. Today the annual catch of anchovy does not exceed 2000 tonnes, although the quota is for up to 60 000 tonnes. The Black Sea fleet now consists of 26 small vessels of which three are still in state ownership.
- **Inland water catch.** The amount of fish caught in the fresh waters does not exceed 600 tonnes, while in the 1980s 2000–2100 tonnes were caught.

Until 1990 fish processing was carried out only by state-owned processing units: Gagra and Sukhumi canning factories, and Batumi, Poti, Kutaisi fish processing factories which produced about 19–20 million cans of different preserves and 9000 tonnes of smoked and salted fish products. In addition, 100 000–120 000 tonnes of non-food fish were produced

for poultry and cattle food, and the ocean fleet produced 6000 tonnes of fish flour. Nowadays, only 25–30% of the former capacity is obtained; none of the factories works to full capacity because of the loss of a market for non-food anchovy (in Russia, Ukraine, Moldova) and the shortage of funds; and the machinery is obsolete. Now processing factories enter into all types of ownership — government enterprises, joint-stock companies, limited companies and private companies.

Salted, smoked and preserved fish products are currently being produced in Georgia. During the Soviet era annual consumption of fish reached 34 000 tonnes; annual per capita consumption was 8–10 kg but has decreased to 2.1 kg. Today 2228 tonnes (1996) of fish are imported. Frozen and salted anchovy and molluscs are exported; 336 tonnes fish (Black Sea anchovy) were exported in 1996.

PROBLEMS OF THE FISH INDUSTRY

The events of recent years had a negative effect on the fishery sector. Considerable increase in the cost of repairs, fuel, equipment and other materials brought the ocean fleet to a halt. Losing the market for non-food anchovy has restricted the activities of the small fishing boats, which now catch fish and other aquatic species for processing for the local market only. There is an urgent need to establish a strategy that will solve the problems of the fishery sector: rehabilitation can be assisted by:

- creating an attractive environment for investment
- establishing a legal basis for the fishery
- modernisation of the processing industry
- setting up network of cooling facilities for a chill-storage chain from producer to consumer
- creating a marketing network
- harmonisation of sanitary and hygienic norms with international standards.

PROSPECTS AND TRENDS FOR FISHERY DEVELOPMENT IN GEORGIA

The fishery sector should be based on a policy of maximised support of foreign investments. The fisheries' strategy in Georgia should be based on its existing advantages which will make rehabilitation of the industry possible:

- It is possible to increase production of Black Sea anchovy — Georgia's annual quota is 60 000 tonnes. Anchovies can be used for human consumption as well as for producing fishmeal: there is demand for this product locally and internationally.
- On the basis of inexpensive labour and energy, good possibilities for rehabilitation of the fish processing industry exist.
- The rivers in the mountainous regions are suitable for expanding aquaculture. There are especially good opportunities for trout farming. Existing reservoirs provide good potential for farming other species of fish through natural production without artificial feeding.
- There are also good opportunities for sturgeon farming — both the necessary experience and the natural resource exist, for example, in the Black Sea endemic species of sturgeon are found.

- Taking into consideration rehabilitation of the ancient Silk Road, through implementation of the TRASECA (Transportation corridor Europe–the Caucasus–Asia) project, it is possible to increase the capacity of existing freezing facilities. These can be used for storage of fish caught in the high seas for re-export to Russia and Central Asian region. Transportation costs drop using the Europe-Asia corridor compared with other routes.

LEGAL AND INSTITUTIONAL ENVIRONMENT

On the basis of present legislation, the Ministry of Environment and Natural Resources is responsible for the fish industry policy and regulations in Georgia. The Ministry defines the quotas of natural reproduction in the Black Sea and issues licences for fishing companies and individuals. According to the licence, fishing is monitored and controlled by fish protection and ecological police. In the reservoirs, the Department of Amelioration and Water Economy of the Ministry of Agriculture and Food (MAF) settles any conflict of water use between irrigation and fish farming.

The Fishery Department of MAF is the co-ordinating administrative body responsible for developing and implementing strategy in the industry. It presents the Georgian fishery to foreign investors, provides latest news to the fishery industry, co-operates with state and private producers as well as with potential investors in consulting and preparing business plans.

RELATIONSHIP WITH INTERNATIONAL ORGANISATIONS

One of the most urgent tasks is to carry out a project to study the potential of the fish industry in Georgia and define trends of development. The priorities for action of this technical assistance project will be established and will help to provide an attractive environment for preparing investment projects and for finding effective credit channels. Finally it will create a proper management system for the industry to make it economically viable.

In this field the fishery sector has considerable support from FAO EASTFISH. This organisation actively works in providing consultants and in finding potential investors. On a regular basis EASTFISH provides the latest information about the fisheries of the world. This organisation also makes it possible for representatives from Georgia to attend high-level meetings of world fisheries.

CONCLUSION

Today fisheries encounter many large difficulties but the economic reforms taking place provide an upturn in the economy and, in the future, Georgia will change from a net food importer to a net exporter. The fisheries sector has a significant role to provide the country with self-sufficiency in terms of food and to increase exports. The fisheries of Georgia have all the prerequisites to become economically viable after relevant restructuring and investment.

Overview of Fisheries of Ukraine and Marketing of Fish and Fish Products

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ABSTRACT

Ukraine has many possibilities for fishery and aquaculture development. Owners have a strong fishing fleet, which is able to carry out distant-water and deep-sea fishing and processing at sea. Ukraine has a coastline of more than 1000 km with a shelf area of 77 500 km². Inland waters occupy an area of 10 250 km², including 9650 km² of reservoirs, as well as many lakes and ponds. Ukrainian fishermen catch fish in the Atlantic, Antarctic and Indian oceans and the western part of the Pacific Ocean, as well as the Black Sea and the Sea of Azov. The total annual fish catch is 425 000 tonnes. Ukraine imports a considerable amount of raw fish and processed fish products, and also exports certain types of fish and fish products. The state of the Ukrainian fishery, its problems and development perspectives are explored throughout this paper.

INTRODUCTION

The area of contemporary Ukraine is 603 700 km², with a coastline of more than 1000 km and a shelf area of 77 500 km². Within its territory there are many rivers with a total length of about 248 300 km; the largest are the Dnieper, Dnesir, Danube, Southern Bug and the Pripyat. The inland water fishery reserves of Ukraine consist of reservoirs (9650 km²), lakes and estuaries with a total area of 1900 km², and more than 900 km² of ponds.

The modern fishery sector, with more than 60 000 employees, is a major part of the Ukraine economy and this is carried out through the State Committee for Fishery of Ukraine (Goskomrybhoz). Currently, economic reforms are being implemented in the fishery sector, as well as in the whole country. Of 288 enterprises and organisations, which are included in the Goskomrybhoz administration, there have been 46 changes in ownership, 22 are in the process of privatisation and 92 belong to the community.

Vessel owners have more than 120 large and middle-distance vessels, approximately 160 small fishing vessels and 50 transport and processing vessels. The fishery fleet catches fish in the Atlantic, Antarctic and Indian oceans and in the western part of the Pacific Ocean as well as in the Black and Azov seas.

The existing fishing fleet and aquaculture enterprises of Ukraine are able to ensure a supply of fish up to 700 000–800 000 tonnes. The production of fish products onboard vessels and at coastal enterprises is more than 600 000 tonnes annually. With effective

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state policy and with the ability to attract foreign investment, development and modernisation of the fleet and coastal infrastructure development are possible.

MARINE FISHERY

The modern sea and ocean catch is based on experience and traditions gained by fishermen since 1969 when Ukraine began to develop state industrial distant-water fishing and began to modernise the fleet in the Black and Azov seas. Currently vessels under the flag of Ukraine work in the following coastal zones:

- Central-eastern Atlantic Ocean – 285 000 tonnes (75% distant-water catch)
- South-western part of Pacific Ocean – 39 000 tonnes (10%)
- South-eastern Atlantic Ocean – 28 000 thousand tonnes (8%)
- Western part of Indian Ocean – 3000 tonnes (1%)
- About 2000 tonnes are caught in the Antarctic part of the Indian Ocean, and the north-eastern and south-western Atlantic Ocean.

During the last three years the areas fished and the composition of catch have hardly changed: about 90 species of fish and other aquatic products are caught, for example, the main species caught in 1996 were:

- Mackerel (*Scomber japonicus*) – 99 000 tonnes (26% of distant water catch)
- Western Atlantic round sardine (*Sardinella* spp.) – 83 000 tonnes (22%)
- Atlantic horse mackerel (*Trachurus trachurus*) – 44000 tonnes (12%)
- Cape horse mackerel (*Trachurus capensis*) – 42 000 tonnes (11%)
- Atlantic krill (*Euphausia superba*) – 20 000 tonnes (5%)
- Blue grenadier (*Macruronus novaezelandia*) – 15 000 tonnes (4%)
- New Zealand squids (*Nototodarus* spp.) – 5000 tonnes (1%)
- *Alfonsinos beryx splendens* – 3000 tonnes (1%).

In addition, Atlantic redfishes, hake, bonito, butterfishes, amourhead, Patagonian toothfish, snoek, southern blue whiting, South Pacific breams etc. are caught in smaller quantities.

The main companies in Ukraine carrying out distant-water fishing and fish production are the Black Sea Fish Industrial Production Holding Enterprise 'Antarctica', Odessa Port, Sevastopol State Enterprise 'Atlantica', Sevastopol Port, Kerch Production Union of Fish Industry 'Kerchrybprom' and Production-Search Enterprise 'Yugrybpoisk', Kerch Port. There is also one large state ship-owner of transport fleet — open joint-stock company 'Yugreftransflot', Sevastopol port.

Considerable work is in progress on establishing and developing a working relationship as a legislative basis for industrial fisheries, and for developing relations between sectors of the fishery industry of Ukraine and coastal states. Ukraine has bilateral fishery agreements with Russia, France, Egypt and Georgia. Work on negotiation of a signed agreement for co-operation with the Government of Mauritania is ongoing. However, most of the catch of Ukrainian ship-owners is on the basis of a trade agreement with commercial enterprises of the coastal states or through international companies' mediators.

Distant-water fishing still faces financial problems and an ageing fleet. Ukrainian fishermen catch more than 30 fish species and other aquatic products in the Azov-Black Sea basin. The fishery in this area consists of traditional coastal catch using passive

methods such as: stationary (placed) sweep-nets, gill nets and fish-hook nets. The mechanised catch contributes 90–98% of the total sea catch of Ukraine in this region. Fish *kolkhozes* [collective farms] belonging to different unions, joint-stock companies and private companies and sometimes distant-water vessels of large ship-owners, catch fish in the Sea of Azov and the Black Sea.

The annual fish catch of Ukraine in the Sea of Azov and Black Sea is about 50 000 tonnes — considerably less than it was 8–10 years ago. The catch comprises mainly Black Sea sprats (67%), anchovies (12%), Azov *tyulka* (3%) and *pilengas* (3%). The Black Sea catch of *khamisa*, sturgeons, cutting shark, flounder (*kalkan* and *glossa*), bullhead, pike-perch, etc. is of smaller quantities. Development of this fishery shows good potential.

INLAND WATER FISHERY AND AQUACULTURE.

Most fish production caught and reared in freshwater reservoirs is by the enterprises of *kolkhoz*/co-operative and state ownership. Agricultural enterprises and private farmers also culture and catch fish in freshwater reservoirs but their share is not large. Leading enterprises in inland fish breeding and capture include Union 'Ukrribhoz', 'Ukrribprom' and 'Rybakkolkhozobiedinenie'. In 1997, 71 800 tonnes of fish were caught in inland waters.

Fish catch in rivers is about 10% of the total amount caught in inland waters and the catch in lakes is approximately the same; the most productive are lakes located near the Danube. The most important species caught in rivers and lakes are goldfish (*Carassius* spp.), silver carp (*Hypophthalmichthys molitrix*), roach (*Rutilus rutilus*), common *kilka* (*Clupeonella cultriventris*), bream (*Abramis brama*), pike-perch (*Lucioperca lucioperca*) and carp (*Cyprinus carpio*): 7500 tonnes of fish were caught in rivers and lakes.

Most fish caught in inland waters are from the reservoirs: the most important are those on the Dnieper cascade which has a total area of 6600 km². About 6000 tonnes of fish (about 80% of total catch in inland waters) were caught in the reservoirs of Ukraine in 1996. The basis of the catch was roach, silver carp, bream and sardelle. Fishing is carried out by co-operative enterprises belonging to 'Ukrribhoz' Union and private businessmen who were given catch quotas. Fish are caught with small boats using coastal methods of capture.

The proportion of fish caught in inland waters is only 2–5% of the total catch in Ukraine. It is necessary to continue measures directed at increasing fish productivity in reservoirs in order to maintain catch volume in inland waters. In particular, it is essential to put into practice the piscicultural land-reclamation plan for lakes and reservoirs. This aims to stock reservoirs with two-year old herbivorous fishes and other fish species, and to begin the creation and maintenance of hatcheries.

FISHERY RESEARCH

Scientific problems, of distant-water fishing as well as fishing in the Ukrainian part of Azov-Black Sea basin, are solved by the YugNiro Institute (Southern Research Institute for Marine Fishery and Oceanography). Mariculture problems are also within its sphere. For the inland fishery these problems are investigated by the Institute for Fisheries UAAS (Ukrainian Academy of Agrarian Sciences).

MARKETING

Enterprises which rear, catch and process freshwater fish offer a wide selection of products, in particular:

- Fresh fish – carp, *sazan*, bighead carp, goldfish, bream, pike perch, catfish, pike, *pilengas*, channel catfish, buffalo and many other species.
- Canned – bighead carp in tomato sauce; *tyulka* in tomato sauce; bighead carp natural with oil added; carp in tomato sauce
- Smoked – bighead carp cut in vacuum packing, bream
- Dried – sea roach and other, and also fish flour mixed fodder production.

Purchasing fish and processed products is carried out by the association 'Ukrribpromsbyt' abroad as well as in Ukraine. It has a considerable amount of freezing equipment; trading and processing enterprises network; essential technical and technological facilities for receiving, transporting, storing, processing and delivering; wholesale and retail trading of salted, smoked and other fish products, canned fish etc. The association includes 48 trade-production enterprises located in regional centres and large cities of Ukraine. 'Ukrribpromsbyt' is the main part of the wholesale market infrastructure of Ukraine, which includes specialised shops, Ocean fish restaurants, and cafes.

Sea-frozen and fresh fish product storage is facilitated by equipping almost every municipal shop and the majority of village shops with refrigerators. Trading in speciality fish products is another business outlet for 'Ukrribpromsbyt', which is almost completely privatised. Numerous holding and private trade enterprises and outlets compete with the 'Ukrribpromsbyt' trade network.

The trend is towards the gradual development of high quality processed products from a previously undeveloped fish product trade.

In accordance with prevalent traditions on the consumer market, the main imported fish species are:

- Raw fish – European horse mackerel, Eastern and European mackerel, Atlantic herring, hake, Alaska pollack, European pilchard, round sardine and others
- Delicacy fish in vacuum packaging and little packing – filleted salmon, eel, sturgeon; sea-frozen shrimp, crab sticks, crab meat
- Canned fish – European pilchard, horse mackerel, round sardine, mackerel, European sprat, tunny-fish, lamprey, crab, black and red caviar.

The total volume of sea-frozen and salted fish production import was about 94 000 tonnes — Russia, Lithuania, Latvia, Estonia, Poland, Denmark, Bulgaria, Morocco, UK, Norway and Germany are among the importers.

Bulgarian Fish Farming and Marketing of Fish Products During Transition

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ABSTRACT

The potential of fish farming in Bulgaria is good with about 70 000 ha of water available. There are two main phases in its development in terms of the aims and economic effectiveness. The first is connected with the need for development and organisation of this new branch of agriculture, with controlled production of fish and supplying the market with more species of fish. In the second period the farmers' main aim has been to realise a profit. This coincides with the period of transition to a market economy and with the establishment of many new private producers in fish farming. With the collapse of the national economy, state-owned fish farms became economically unstable; subsidies were stopped and traditional markets for exported fish were lost. After 1989 farms increased their debts to the banks and total fish production dramatically decreased. The radical changes caused by the political and economic upheaval in Bulgaria created many difficulties in the transformation from a centralised to a market-oriented economy. In spite of the Government's decision to start privatisation, many problems have hindered the creation of private farms during the period of transition. Economic survival of the private fish farms depends on an optimal combination of fish production, and production and marketing of quality fish products. The new conditions in which fish farming can be developed in Bulgaria require an effective system for training new farmers, a marketing information system, and consulting services. These are essential if fish production is not to be isolated from the modern economic world and for its realisation as a major agricultural sector.

INTRODUCTION

Aquaculture worldwide has over the centuries been a main way of existence and welfare for many people involved in rearing different species, in manipulating water resources and in socio-economic development of different areas. Development of fish farming in Bulgaria began at the end of 19th century. Many fish farms were built for raising carp and trout and for producing fingerlings and market size fish, and for training specialists. The number of fish farms increased and over the last few years fish production was included in state-owned fish farms and in fish farms of state-owned agricultural co-operatives.

The potential of fish farming is large with the availability of about 70 000 ha of water in Bulgaria, including dams of more than 30 000 ha, 3700 ha of carp farms, 42.1 ha trout

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farms and 14.2 ha net cages for raising rainbow trout and carp. The main fish species reared are carp and rainbow trout; grass carp, silver carp, and bighead carp were introduced in 1964, and channel catfish was introduced in 1975.

DEVELOPMENT OF FISH FARMING

There are two main periods in the development of aquaculture: the first period concerns the need for development and organisation of this new branch of agriculture, with controlled production of fish and providing the market with more species of fish; in the second period, which coincided with the transition to a market economy, the farmers' main aim was to realise a profit.

In spite of the efforts of the State to help producers in the first period, fish farming was a relatively unknown activity among farmers and had not been profitable; it remained within the state fish farms and in the farms of the state-owned agricultural co-operatives. Managers of the state-owned fish farms were not concerned with the concept of marketing the fish and fish products, only of meeting state-levied production quotas. The amount of fish produced was regulated only by the capacity and the features of the facilities without accounting for the economic effects. Before 1989, the main aims of fish farming development were to increase yield; create new technologies for producing fingerlings; introduce new species and increase the effect of fish breeding methods. Analysis showed that average fish production increased as a result of increasing the area of water for carp and trout farming. Increased productivity was also a result of improvement in the technology for trout farming in raceways (Grozev and Petrov, 1989). Biotechnologies for cultivating mussels at sea have also been developed (Staykov, 1997a).

The second period coincided with the transition to a market economy and with the establishment of many new private producers in fish farming. However, lack of capital, insufficient professional experience and unregulated markets resulted in many farms being lost (Staykov, 1997b). Under market economy conditions, aquaculture is dynamic and effective but it is necessary for the new private farms to optimise production in order to be highly competitive on the market and to make maximal profit. This will allow intensification of fish production, an increase in its economic effect, and the gradual return to its previous position as a major force in the agricultural sector. Also the lack of knowledge for environmental protection from fish production, for its interrelation with other public activities, and for its incorporation within the economic infrastructure of the country will adversely affect the development of this branch of agriculture.

After the economic and political changes in Bulgaria, the Government stopped subsidising fish production in state-owned fish farms. Debts increased while production decreased on these farms (Staykov, 1997b) and because of inflation and high interest rates these farms were soon bankrupt. Realising the sorry state of an otherwise promising industry, the Government decided to sell or to rent such fish farms and in 1994 the Ministry of Agriculture initiated their privatisation. By 1995 many were privatised along with all equipment, machinery and buildings on the property, and a right to rent the ponds on the farm for different periods. The new owners began to develop a strategy for the future. During economic transition, due to the weakness of the Government and the lack of an appropriate legal system, some of the equipment and machinery was stolen, some destroyed and fish production stopped for a few years. Because of the lack of capital for restructuring, these farms did not operate for the first 1–2 years. Farmers realised that to be successful and to stabilise fish production their farms needed significant changes.

Before the changes in 1989, there were no problems financing production and marketing fish in the fish farms, because the Government was responsible for these activities. In the free market economy, the new owners had to devise their production programme to produce the optimum amount of fish for the maximum profit. Farmers realised that the intensity of the production technology had to be changed to a less-investment consuming technology, while optimising the amount of fish production if they wanted to decrease the costs and to increase the profit in the fish farms (Tisdell, 1993). After one year the privatised fish farms sold the first fish, and the farmers realised that fish production could be a profitable business.

BACKGROUND TO PROBLEMS IN FISH FARMING AND MARKETING

Before 1989 fish farms supplied the domestic market with live, fresh and iced fish. Part of the carp production was purchased by the largest processing factory 'Slavyanka' for canning; the majority of the production was exported to neighbouring countries. Fingerlings were used either by the farms or for seeding streams and rivers in Bulgaria. During this period the centralised management hierarchy did not encourage initiative, and managers had to follow instructions. No concept of marketing or gross margin efficiency was applied (Staykov, 1993). With the collapse of the centrally controlled system, state-owned fish farms were left to cope with unstable and costly feed supplies, non-guaranteed marketing channels for their production, and with excessive administration costs (Cirkovic and Staykov, 1997).

When fish farms were owned by the State, managers were not concerned with profitability of fish production, because the Government subsidised losses. The main purpose was to produce the maximum amount of fish annually, without applying any gross margin efficiency. As a result of the serious economic conditions in Bulgaria since 1989, annual fish production in the fish farms has decreased significantly from over 10 000 tonnes in 1989 to less than 3000 tonnes in 1996; from 1992–94 many farms did not operate. Production decreased by more than 60% (Staykov, 1994); it was suppressed by the high price of feed, the low prices of the market-size fish, and the absence of the customary fish markets.

The first indications of the pending crisis in Bulgarian fish farming emerged during the 1980s. Almost certainly, the most significant element contributing to this crisis was the decision by the Government to stop providing financial support to the state-owned fish farms (1990–95) (Staykov *et al.*, 1997). State fish farms were unprepared to react in an adequate manner to the new economic situation in Bulgaria. Areas used for fish farming were reduced on such a large scale that fish farming became virtually unknown.

With the collapse of the national economy, fish farms became economically unstable. As mentioned earlier, subsidies were stopped, export markets were lost, debts increased and fish production decreased. At the same time, it was difficult to sell the fish on the market because of significant increases in the prices of fish and fish products, and because of a decrease in consumer demand (Staykov and Cirkovic, 1997). As a result of bankruptcy some state-owned fish farms sold off part of their possessions and rented out their production facilities, often to individuals who used them for purposes other than fish farming (Staykov, 1997b). Thus, fish production from many state-owned farms was partially or totally stopped and, therefore, production decreased from 15 400 tonnes in 1982 to 5000 tonnes in 1997.

THE MAIN PROBLEMS

The economic survival of fish farms during the transition period depends completely on an optimal combination of fish production, and production and marketing of quality fish products. Fish farmers must organise and optimise production so as to minimise risk and to ensure high market competitiveness and maximal farm profit.

The main problems and weaknesses in the development of aquaculture in Bulgaria during the transition period are:

- lack of working capital and an inability to utilise the achievements of the intensive and super-intensive technologies for fish production
- lack of integration between fish farming, processing of fish, and marketing of fish and fish products
- increased competition from foreign markets
- unrealistic increases in the differences between wholesale and retail prices of fish and fish products
- under-utilisation of the distribution outlets of the domestic market
- inadequate management of the state-owned fish enterprises
- lack of the security of ownership of the private farmers
- lack of expertise in fish farming and technological errors in exploitation of the farms
- low quality of the fish and fish products produced
- weak legislation for security of contracted relations
- lack of consulting services for fish farming.

REASONS FOR THE CRISIS

The main reason for the present crisis in aquaculture development is the slow process of constructing fish farms; this delays their privatisation, which in turn influences the effective utilisation of the available production. At the same time rent contracts are unstable and/or short term, which is one of the reasons fish producers do not invest capital for improvement without thought to their future development.

Financial policy

Bankruptcy of some state fish enterprises is a result of poor government policy for animal husbandry development, and of the instability of the farmers' income, which is a result of an inadequate state financial policy. In this situation fish farms are unstable and are dependent on the market without clear legislation and principles for animal husbandry having been developed during transition. The profit of new private fish farmers is low or their farms are lost.

Marketing systems

Most importantly, the stability of Bulgarian fish farming development depends on organising effective marketing systems for produced species, which will guarantee appropriate gain for fish farmers and will decrease the risk from price fluctuation (Lee, 1993). Improvement of the marketing system will reduce the difference between the wholesale and retail prices of fish and fish products, and will enable increase in the profits of producers. For reducing production risk in fish farming the State must organise a good information system, with data on market prices, amount sold, number of fish producers, and on forecasts of production (Lee, in press).

Production factors

Because fish farming is an industry that relies on biological processes, it may be classed as one with high production risk — this does not mean it must be avoided for investment. The different forms of fish farming activities allow the possibility of making a good profit. It is necessary for Bulgarian fish producers to understand that a market economy needs competition, rational thinking, and good management of all financial processes on farms. Before investment, the risks must be carefully explored and evaluated. Recently, different companies have expressed an interest in investing in some areas of fish farming: capital has already been invested private farms producing mussels and freshwater fish species.

Before 1989 fish farming had little need for advice from different consulting offices as production was mainly in the hands of large state-owned fish farms which had their own specialists. In the new economic conditions, smaller farms are created and they need help from consulting services. Agricultural universities and scientific institutes have highly qualified specialists with a wealth of experience, practical skills, and knowledge of the farmers' needs. This development of consulting services is connected mainly with the idea that not only do farmers need advice and information, but also they need answers to specific questions, analysis to identify their problems, and financial advice to help them make business decisions.

Investment in technology

Before transition, farms used very intensive and investment-consuming technology for maximum fish production. To make production more efficient the manager and others on the management team applied less-intensive technology, called semi-intensive, using smaller fish stocking densities. This system decreased costs and helped reduce the number of salaried workers. At the same time it allowed production of a larger size of carp which could be supplied to the market earlier than other fish farms. With the production of these larger carp, the farms were able to export a significant part of their production to neighbouring countries, where the demand is for larger fish.

In the process of improving production, the stocking densities of growing fish decreased and the yield per hectare also decreased. However, the profit of the farms increased because, using semi-intensive technology, the largest part of the total yield of fish comes from the natural food in the ponds, and thus decreased the amount of artificial feeds used in the farms.

CURRENT SITUATION

Further improvements in the production process were made by the new owners, who developed a training programme to improve their workers' skills as fish producers. According to the private farmers, one of the most important contributions to the farm's turn around was the savings obtained by a reduction in salaried staff (see Figure 1). The number of administrative staff was reduced and one specialist became responsible for more activities on the farm. The number of workers was also reduced and a scheme was developed to make it the individual responsibility of the fish producers for growing the fish in their ponds.

The fish farms' net sales and profitability improved over the last few years; net income was stable in most private farms, except the initial year when it was negative. After privatisation, the fish farms turned around their activities and in 1996–97 made good

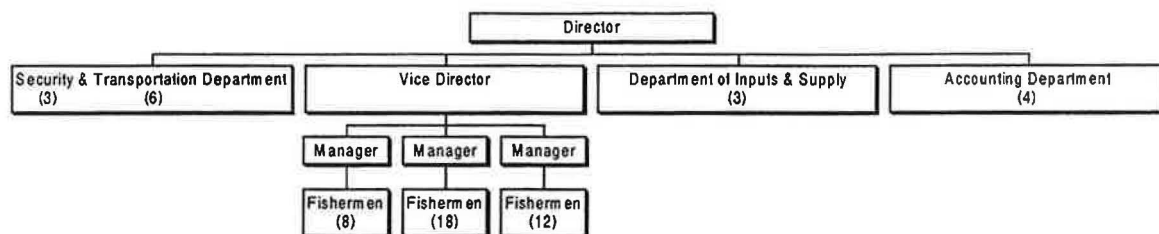
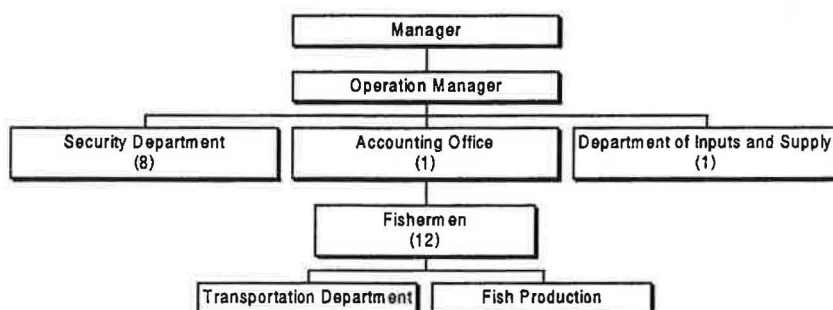
State-owned fish farm**Private fish farm**

Figure 1: Organisation chart of state-owned and private fish farms

profits from fish production and, at the same time, the farmers were successful in restructuring most of the farms and in applying profitable technology for growing fish. It is predicted that, by the year 2000, production will have regained 1989 levels of around 10 000 tonnes. The marketing strategy was to increase production of different species of fish and fish products and to supply a greater share on the market. Managers initially focused their efforts on development of a better scheme for the production of fingerlings, because of the large demand from the other farmers.

In the first production years, new private fish farmers concentrated their efforts on successfully selling all produced fish, alive or fresh, without additional processing. Improvement in fish production, and their increased profit allowed the farms to own a chain of shops to sell the fish, and to consider building small processing factories. The farms increased their share of the domestic market, supplied different groups of customers and developed new markets for exporting a significant part of their fish production.

This change to being a profitable business with the change from a state-owned structure to a private one, caused the farms to be viewed as an example, in agriculture production, of what can be accomplished from privatisation. In order to increase further their share of not only the domestic but also the international market, the farmers realised that they have to extend the market segment by supplying other products in addition to fresh and live fish. They are currently planning to build processing factories and expand the production of different fish products.

CONCLUSIONS

The radical changes caused by the political and economic upheaval in Bulgaria created many difficulties in the transformation from a centralised to a market-oriented economy. For successful privatisation, it is necessary for the large fish farms and enterprises to be offered as separate smaller farms and production units. At the same time production must be aligned with present market demand, according to the amount and quality of the produced species. Optimising the amount produced is necessary with the goal of increasing their gain and market competition. The critical condition of the state-owned fish farms — serious financial situation, debts, old production facilities, insufficient water supplies — retard the privatisation of some fish farms. Also, it must be understood that private firms are ready to invest capital in fish production and this opportunity must be exploited by accelerating the process of privatisation of the farms and revitalisation of fish farming.

To be competitive, the private fish farmer must sell not only live and fresh fish, but also high-quality fish products. The private co-operatives must build enterprises for processing fish, create marketing groups, produce fingerlings and supply farmers with feeds. The new conditions in which fish farming can be developed in Bulgaria, including market orientation and private ownership of the farms, require an effective system for training new farmers, a marketing information system, and consulting services. These are vital if fish production is not to be isolated from the modern economic world and for its realisation as a major agricultural force.

From an economic point of view, intensive technology, requiring large capital, is unsuitable. Generally, in freshwater fish farming there is at present a clearly expressed tendency to semi-intensive and even extensive technologies for fish production. Depressed by the reduced purchasing ability of the population, market stagnation, and lack of resources, fish producers are obliged to apply technological decisions which lead to decreasing yields.

New types of interfaces between research institutions, state administration and farmers are necessary to enable application of the principles of market economy in the process of organising fish production. Creating conditions for investment of foreign capital, the creation of more secure business contracts and revitalisation of contacts with European partners are the basis for the successful reconstruction of Bulgarian fish farming.

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Marketing Fish and Fish Products and the Current Status of HACCP in Estonia¹

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ABSTRACT

Estonia is one of the six countries that participates in EU enlargement negotiation. This paper introduces the current situation of, and changes in, marketing and trade of Estonian fish and fish products with other Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) countries. The role of marketing and trade in the Estonian economy and the part it plays in the processing and preservation of fish will also be explored. The application of Hazard Analysis Critical Control Point (HACCP) systems, which is increasing globally and is closely connected with marketing and trade, is also covered in this paper.

INTRODUCTION

Traditionally, fisheries have played an important part in the Estonian economy. The fishing and fish processing industry have successfully overcome the loss of direction and stagnation that prevailed in the 1990s resulting from the collapse of collective fish farms. In recent years the Estonian fishery sector has experienced a period of rapid growth that has brought about ownership changes, revenue growth and increasing export potential. Fish processing is the leading sector in the food industry and, notably, canneries are the backbone of the fishery sector: they may be termed 'the engine of the Estonian fisheries', which make the sector prosper.

According to the Statistical Office⁴, the total area of Estonia is 45 227 km², of which the inland water area is 2833 km². There are 1521 islands and the coastline is 3780 km. Lakes constitutes 6.2% of the total area; the largest are Lake Peipsi (which has a total area 3555 km² with 1529 km² in Estonia) and Lake Võrtsjärv (area 266 km²). The population is 1 462 130 (January 1997). National currency is the Estonian Kroon (EEK) with EEK = 100 cents) and EEK 1 = DM 0.125.

PRODUCTION AND MARKETING OF FISH AND FISH PRODUCTS

Production data

Of the total production in Estonia in 1997, with a value of 32 414 million kroons, the processing industry contributed 82.5%, of which food and drink production represented

¹ This paper was not presented at the Symposium.

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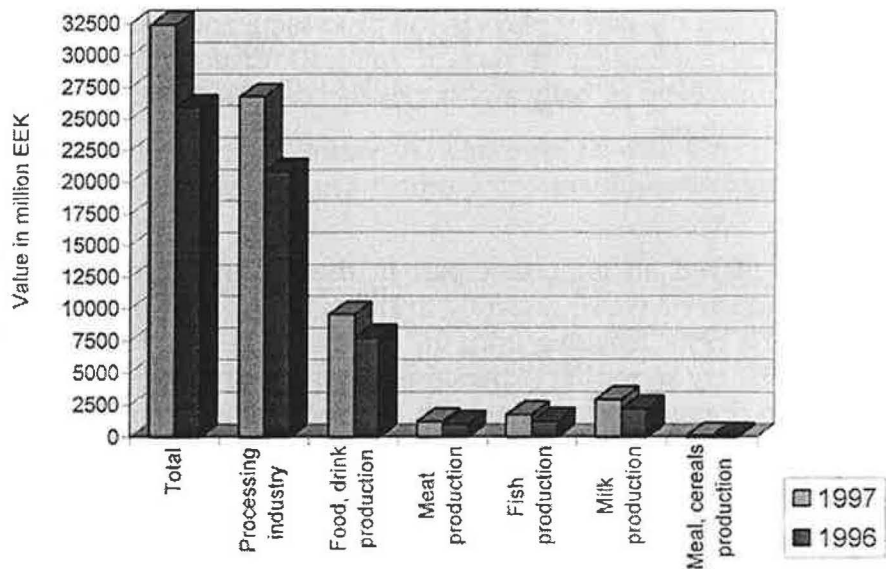
³ Erge Tedersoo (MSc) is a scientist from the Department of Food Processing in Tallinn Technical University. Her main activities are providing training courses for food handlers and teaching students. She has experience on quality, quality assurance, standardisation, food safety and HACCP and for the past five years has been working as a consultant in these fields.

⁴ Data obtained from 1997 and 1998 publications of the Statistical Office of Estonia.

35.7% (see Figure 1). The lower chart shows the relationship between meat, fish, milk, and meal and cereal production in expanded form, with fish and fish products (with a value of 1759 million kroons) representing 18.4% of food and drink production and about 6.6% of all processing industry's production. Comparing production figures for 1997 with the previous year, food fish as well as canned fish production increased considerably — by over 15% and by over 35% respectively (canned fish constitutes over 85% of all canned production in Estonia):

	1996	1997
Food fish products (thousand tonnes)	30.1	36.7
Canned and preserved fish (million standard cans)	44.6	69.2

Production industries



Food and drink industries

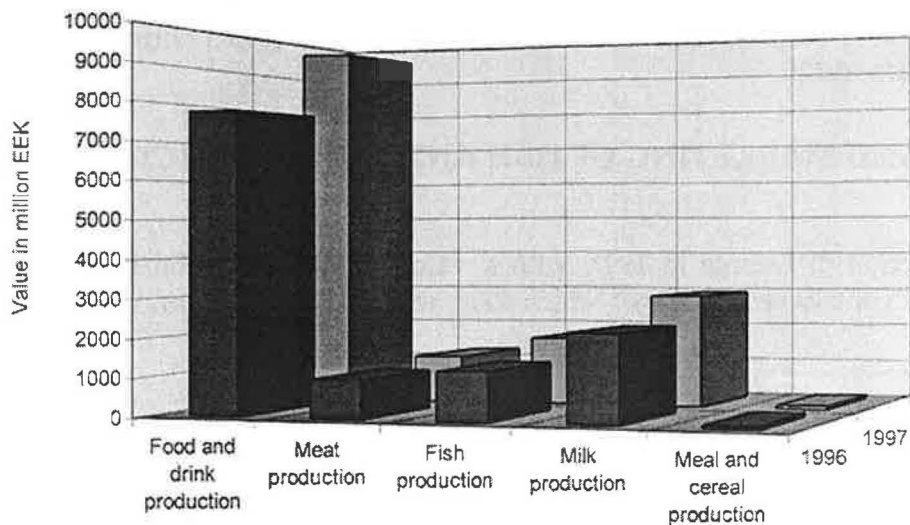


Figure 1: Production industries in Estonia for 1996 and 1997 (million EEK); the lower chart shows the relationship between meat, fish, milk and meal and cereal production

Domestic market

Currently the annual per capita consumption of fish and fish products in Estonia is estimated at 19–25 kg. Today the Estonian consumer may be satisfied with the retailers' product range, quality and relatively stable prices (price rises do not always accompany inflation rate) but there is a highly underdeveloped local market for fresh chilled fish.

Consumers buy fresh fish mainly at eight market-places or supermarkets, and at the few specialised fish stores. The price of fresh fish depends on species. According to the Fisheries Department (unpublished data) average prices at landing for the most important commercial species in 1997 and 1996 are as shown in Table 1.

Table 1: Average prices of most important commercial species, 1997 and 1996 (EEK/kg)

Species	1997	1996
Herring	2.19	1.86
Sprat	1.94	1.51
Cod	12.50	11.70
Flounder	6.47	5.99
Salmon	30.00	36.70
Eel	96.70	90.40
Freshwater bream	6.72	4.55
Pike-perch	34.70	30.80
Perch	18.30	11.80

On the local food market, fish is appreciated as a high-quality and fairly priced commodity. Concurrent with a rise in general purchasing power, manufacturers can realistically raise prices as a result of quality improvements, product range development, introduction of both locally manufactured and imported delicacies, etc.

Baltic Sea and inland water fishermen deliver mainly raw fish to the Estonian market. The Estonian distant-water fishing

fleet sells almost all their catch to foreign traders abroad. Fish and fish products are free from import or export custom tariffs or duties. There are no developed or institutionalised distribution channels. Also, there are no longer any fish auctions nor any specialised export or trading organisations for fish and fish products.

Exports

Estonia exported nearly 147 000 tonnes of fish and fish products with a value of EEK 1121 million in 1997. Fish and fishery products constituted 11% of food production exports and are the most important food exports (Table 2).

Table 2: Value of exports (1997 prices) of various commodities in industries with over 50 workers (%)

Commodity	Fresh	Processed
Meat	9.3	0.8
Fish	86.3	11.0
Milk	40.6	8.8
Meal and cereals	0.4	0.0

Comparing export data in 1997 to 1996, capacity increased considerably (Table 3). In 1997 Estonia exported 45% more fish and crustaceans than in 1996 and 31% more prepared or preserved fish). According to the Statistical Office, transport was mostly by rail and road for export of fish and food fish production) in 1997.

The main market for Estonian exports is naturally Ukraine and Russia, but we also have sold our fish and fish products to EU countries. Statistical Office data show the exports in 1997 to main trading partners (expressed as % of total export value) were:

Commodity Chapter 03⁵ (76 181 t valued at EEK 600.5 million)		Commodity Chapter 16⁶ (70 768 t valued at EEK 520.4 million)	
Ukraine	31.7%	Russia	63.9%
Russia	21.5%	Ukraine	25.4%
Netherlands	16.3%	Latvia	13.3%
Denmark	8.5%	Lithuania	10.4%
Germany	6%	Germany	5.2%
Switzerland	5.5%	Finland	2.7%
United Kingdom	1.3%	Sweden	1.5%

Estonia also exported to the United States, Norway, Belarus etc., but the amounts are not significant. Comparing 1997 to 1996 the main trading partners are the same, only the export percentage differs slightly. According to the Estonian Fish Association (unpublished data), the main exports to the eastern market are canned sprats in oil and sprat (or herring) in tomato sauce, and the main exports to the EU are fillets of freshwater fish, preserves of sprats and fish fingers.

Table 3: Export and import of fish and fish products in 1996 and 1997

	1996		1997	
	Quantity (t)	Value (million EEK)	Quantity (t)	Value (million EEK)
Exports				
Fresh fish and fish products (03)	41 981	351.4	76 181	600.5
Processed fish and fish products (16)	48 460	844.7	70 587	520.4
TOTAL	90 441	1196.1	146 768	1120.9
Imports				
Fresh fish and fish products (03)	29 362	227.8	64 869	507.9
Processed fish and fish products (16)	1 153	28.5	2 521	35.4
TOTAL	30 515	256.3	67 390	543.3

Imports

In 1997 Estonia imported 67 390 tonnes of fish and fish products of valued at EEK 543 million, constituting 5% of the main food products imports, and 30 515 tonnes fish valued at EEK 256 million in 1996. The quantity and value of imports increased considerably (by about 53%) in 1997 compared to 1996 (Table 3).

⁵ Commodity Chapter 03: [Thought to be] Fresh, chilled and frozen fish, crustaceans, molluscs etc.

⁶ Commodity Chapter 16: [Thought to be] Processed fish, crustaceans etc.

The main trading partners are European countries, especially Nordic countries and Russia. Imports in 1997 by main trading partners (expressed as % of total import value) were:

Commodity Chapter 03 (64 869 t valued at EEK 507.9 million)		Commodity Chapter 16 (2521 t valued at EEK 35.4 million)	
Russia	15.5%	Denmark	48.7%
Finland	6.0%	Finland	21.2%
Netherlands	5.%	Germany	11.1%
Sweden	5.2%	Sweden	10%
Denmark	3.2%	Netherlands	5.8%
Germany	2.9%	United Kingdom	5.5%

EDUCATION AND TRAINING NEEDS FOR FOOD INDUSTRY

Estonian Food Law adopted in 1995 demands an establishment and implementation of quality assurance systems, including Hazard Analysis Critical Control Point (HACCP) — one of the best food safety assurance systems. To improve the safety of foods the Government has undertaken various programmes:

- Co-operation programme 'Strengthening of the food control system in Estonia' between FAO and the Estonian Food Inspection Organisation
- Poland, Hungary Assistance for Reconstructing the Economy (PHARE) project 'Assistance to upgrading the efficiency of the Estonian food processing industry' between DLG-Agriservice consulting company in Germany and Veterinary and Food Department of Estonian Ministry of Agriculture
- Training programme 'Training course for fish processing industry inspector' between the Danish consulting company 'Matcon' and the Estonian Veterinary Inspection Organisation.

Today the main attention is focused on the implementation of HACCP in the food industry through the training of food handlers. HACCP is a powerful system, which can be applied to a wide range of simple and complex operations. It is used to ensure food safety at all stages of the food chain. It is essential for all staff to understand the necessity of establishing HACCP for the company. Therefore there is a real need for systematic and continuous training of the employees: HACCP can be effective only if people are systematically trained. At present many food enterprises, including the five largest fish companies, are trying to establish HACCP in accordance with the hygiene requirements of EU. This has been pioneered by Paljassaare Fish Production Ltd., where HACCP has already been implemented.

Role of Department of Food Processing, Tallinn Technical University

The Department of Food Processing in Tallinn Technical University (TTU), created in 1956, consists of two closely related food specialities: Food Technology and Food Science.

The main areas of activities are:

- teaching students
- continuing education (co-operation with companies and enterprises to make use of the results of research and development work; consulting with specialists from enterprises, with officials etc.)

- food control (professional advice to companies and individuals; food analyses)
- training.

The Department of Food Processing is one of the local leaders in sharing knowledge about food hygiene, food safety, food legislation, HACCP, etc. for Estonian food handlers through continuous contact and collaboration with colleagues from:

- School of Food, Fisheries and Environmental Studies, University of Humberside (UoH), UK, in the field of Total Quality Management (TQM), HACCP and food legislation
- Leicester University, UK; Haaga Institute in Finland; consulting company 'Matcon' from Denmark etc.

The Department plays an important role in the implementation of food safety and quality assurance systems in food enterprises mainly by:

- **Training specialists from food industry.** This training includes both theoretical knowledge (know-how, consulting, seminars, sessions, tutorial materials etc.) and practical advice (workshops) to introduce food legislation, food hygiene, food safety, HACCP system as a best system guaranteeing food safety in the food industry, food control problems etc. To share the latest legislative information on food safety and quality control (EU Council Directives on Food Hygiene 93/43/EEC, Food Labelling 89/396/EEC, Food Additives 94/34/EEC etc.), the Department of Food Processing (TTU team) has, since 1995, arranged open days for all food handlers, traditionally three times a year, which have become very popular among specialists.
- **Special training programmes.** According to the EU Council Directive 93/43/EEC on Food Hygiene, HACCP principles and demands of Codex Alimentarius, food handlers have to ensure food hygiene in the whole chain. The TTU team, in collaboration with partners from UoH have prepared food hygiene courses for two levels according to the requirements of the EU directive:
 - basic level (6 h) provides basic knowledge for all employees
 - intermediate level (24 h) course is addressed to companies' middle managers and top-leaders — after passing this course the specialists could present the elementary training programme to their staff; according to the Know How Fund project, the intermediate course began in May 1997
 - highest level (40 h) is being prepared by TTU team and is designed especially for food handlers with a high risk.

To guarantee a certificate for students which is recognised in the EU, the Department of Food Processing is to achieve an accreditation in teaching these three training courses.

In addition, a special training programme (36 h) for Estonian veterinary inspectors was designed in 1998 and four courses were delivered by TTU team. Attention focused on hazards, hygiene, food safety and HACCP system. Over 120 inspectors from all counties took part. The same training programme was arranged for 40 health protection inspectors.

- **Practical advice.** For several companies, including three fish companies, practical advice has been provided to establish HACCP system for producing fish fingers, semi-preserved herring fillets and canned fish.

Partners from UoH have participated in several seminars and workshops arranged by TTU team to give additional information and advice on topics such as HACCP in the food industry, food legislation, and HACCP in the meat industry.

The TTU team analyses the background of participants to help to clarify peoples' special interests and to take these into account in planning new training programmes. In addition, the trainers have an opportunity to address activities directly to the group of people with common interests and/or to expand the subjects of the training programmes. There has been a growth of interest in the seminars over last five years, with numbers of participants increasing from 50 in 1993 to over 350 in 1997. From February 1993 to November 1997 over 1150 food handlers took part in seminars and workshops. Eighty or more food handlers (mainly middle management) attended each special traditional open-day, held every four months in 1995–97. In addition, more than 800 employees (including approximately 200 people from the fish industry) have been trained in basic food hygiene in 1994–97.

Partnership and support to food industry

Nowadays our officials and universities (Department of Food Processing of TTU, Meat and Dairy Institutes from Estonian Agricultural University) have many contacts with officials and high schools from abroad. During the last 2–3 years, valuable information on how the food control system works in the EU was given to Estonian food companies and officials by external experts from FAO and different consulting companies. Initially the emphasis was on sharing theoretical knowledge: now more practical advice has been added for producers and all food handlers through continuing programmes. Therefore the main purpose of the current set of programmes is to consolidate the models previously provided in Estonian industry by focusing on continued delivery of workshops in the most important fields (e.g. food hygiene and food safety, HACCP etc.).

All projects, such as the Know How Fund, PHARE, etc. have provided opportunities for Estonian specialists to develop their expertise and experience, linked with industry in various ways. Through these projects it is possible to show that old habits must be changed but it could be slow and painful. A new way of thinking is achievable using systematically trained food handlers. Only in this way can they obtain the requisite knowledge and ability to establish and maintain the HACCP system. Company personnel have to understand how to achieve good quality, and safe products.

Implementation of HACCP through PHARE Project

Hazard Analysis Critical Control Point programmes involve the development of HACCP plans for every product and process — this is not a simple task. It will require access to expertise, training programmes and research. To address these needs, the collaborative PHARE project was created. Its main objective is to assist the Estonian agroprocessing industries to meet the demands of domestic and international customers through training and practical advice on implementing HACCP and quality assurance systems.

Firstly, the project provides a mechanism of training and evaluation to guarantee effective implementation of HACCP. Secondly, it hopes to encourage industry in the early adoption of HACCP in its operations. The focus is to increase management awareness and demand for improved quality systems and to ensure that the local

specialists or consultants are capable of providing good advice and training. The project's strategy is to train a group of local specialists from universities and other organisations in specialised ongoing subjects and to share this knowledge with people in industry. The project has the following elements:

- external and local co-ordinators of the current project
- a group of local specialists (eight people) from universities, organisations and official bodies, with two people in each sector (dairy, meat, fish and bakery) who are trained to provide specialist services in the selected pilot enterprises and in the implementation of training programmes concerning quality control and food safety assurance system
- a group of two to three consultant companies, which make contracts with enterprises on planning and implementing HACCP, covering wider areas than an individual specialist
- eight selected pilot companies (two in each sector)
- external experts (one for each sector).

Selection of pilot companies for preparation of HACCP programme is made by the project management committee according to certain criteria (viability, management interest, organisational capability).

In the first stage, local specialists acquired knowledge according to a special training programme and received tutorial material. After passing this training, a five days' seminar for industry middle managers in each sector (including pilot companies) was arranged by the local specialists. For improved dissemination of information and skills, trainers in the fish sector used different teaching methods (lectures, discussions, group work, brainstorming, case studies).

The aim of the training course was that each participant gains a basic knowledge about HACCP and is provided with guidelines on how to establish HACCP and create a system to ensure food safety — 28 people from 17 fish companies took part in this course.

In the next stage the main attention focused on establishment of the HACCP system in pilot companies. Collaboration of fish sector specialists with the HACCP teams of both pilot companies will continue. The sector specialists and external experts have visited the companies several times to discuss the problems and give practical advice. Developing the HACCP system in pilot fish companies is progressing step by step and will be completed according to the HACCP plan by December 1998.

A wide variety of techniques is used to identify and analyse hazards, but in practice the main method of risk assessment is an HACCP system used in the food industry. The theoretical basis of this concept is not always easily understood by all food handlers and they need more teaching and explanation. Sometimes HACCP teams of companies know the theory well, but in practical activities often need advice on how to specify criteria for control, document monitoring and to show that proper control is achieved. The choice of controls for hazards and methodology to check that control is achieved is a very important part of the HACCP procedure.

Training efficiency

Feedback about training efficiency in fish sector is presented as:

- Participants' background — 31% were quality managers, 31% were head of laboratories etc., 23% were production managers, and 15% were supervisors
- The purpose of training has been fulfilled totally in the opinion of 32% of participants, and only 4% of participants found that the course did not answer their expectations or wishes.
- For 20% of participants all the presented information was absolutely new, for 28% it was mainly new and only 4% of people did not get any new information.
- 48% were sure that they could use most of the knowledge in future, 36% thought they could apply all the information and 16% felt that they could use this information only partly.

CONCLUSIONS

- In managing food safety the highest degree of confidence is achieved by using a HACCP system which has been established by experts.
- HACCP can be effective only if people are systematically trained. The training of industry staff has to be continued until people feel a positive attitude towards quality and are convinced that their contribution is essential.
- The way ahead must be to complement the trainers' skills and practical experiences. There is a need for some short good videos to make the learning process more interesting.
- HACCP Documentation Software will be useful and can be used for training purposes.
- With current and future programmes Estonian trainers and experts intend to help ensure safer fish products through the implementation of HACCP systems in the whole chain of food handling.

SUMMARY

The fish processing industry is unquestionably one of the most important industries in the Estonian economy. Production and exports of fish and fish products are increasing, in terms of volume but not in value. Imports are increasing; although we face some difficulties, as do most Eastern European countries. For example, the fish industry has problems of waste, low productivity and some problems concerning integration to the EU. In the domestic market there are no fish auctions and distribution channels. In the Eastern market, especially in Russia, tariffs are too high and reduced purchasing power can greatly influence our fish industries. However, Estonia is a country with long-standing fishery traditions and the fish processing industry has successfully overcome stagnation, so we believe that Estonia will successfully overcome the current problems.

As a result of collaboration with external partners, special training programmes and courses have been developed by the TTU team; there is a real flow of expertise and know-how from the external partners through the local specialists and into the Estonian food industry.

Current State of Fish Consumption in Hungary¹

István Szűcs and László Stündl, Debrecen Agricultural University, Hungary

ABSTRACT

At present, annual per capita consumption is around 2–3 kg in Hungary (EU average is 17 kg); it includes domestic production and imported fisheries products. While domestic production reaches the customers as live fish, imported fish is mostly processed products, such as canned, deep-frozen convenience packed, deep-frozen fillets, smoked, etc. This paper evaluates patterns consumption of fish in Hungary and explores the strengths and weaknesses of this industry. The research on domestic fish consumption patterns was based on questionnaire surveys and detailed interviews with different players of the product chain. The most important target groups were the final consumers, people employed in fish retailing, general food retailers, people working in catering, and fish producers.

INTRODUCTION

The average per capita fish consumption worldwide exceeded 14 kg in 1995 (live weight), the maximum value to date, and compared to the 1994 data represents a 5% increase: the highest since 1954 when annual consumption was 8 kg per year. In the early 1960s, fish accounted for 14.3% of the animal protein intake (4.6% of the total protein consumption); this increased to 15.4% (5.5% of the total protein consumption) by the end of the 1990s. Worldwide, the amount of fish used for fishmeal and oil is tending to decrease, while the amount used for human consumption is increasing (Figure 1).

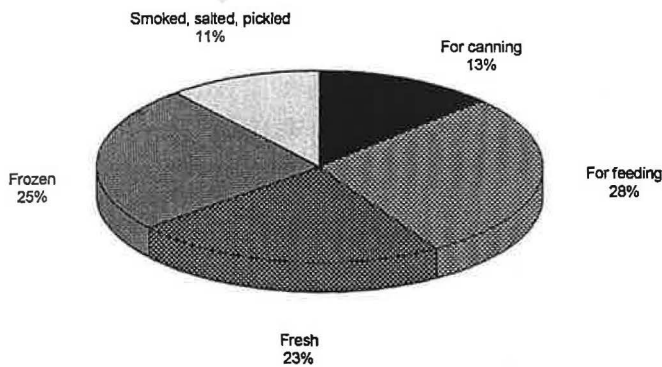


Figure 1: Distribution of fish landings by utilisation (1991)

3 kg in Hungary (EU average is 17 kg) which is around 4–5% of the total meat consumption. This includes domestic production which reaches the customers as live fish as well as imported fisheries products which are mostly processed products (canned,

In the first detailed study on food consumption in Hungary, 'Food consumption statistics of Hungary on physiological basis'; Károly Keleti (1889) reported the annual fish consumption to be 1.5 kg per person. The fish were mainly from inland fisheries, pond fish culture accounted for only a small fraction. At that time fish had great significance for public nutrition, being the only affordable meat for the poor.

Currently the annual per capita fish consumption is around 2–

¹ This paper was not presented at the Symposium.

frozen convenience packed, frozen fillets, smoked, etc.). According to the available data and our estimations, the domestic consumption structure comprises 55–60% live fish, 10–15% canned fish, 20–25% frozen and approximately 5% other fish products (pickled, smoked, etc.). The domestic market opportunities are modest, since consumption is very low, and the demand for fish products is seasonal. Live fish is sold almost exclusively via retail chains, but because there are only a few retail shops, is not readily available to the majority of the customers. The retail chain food shops accept only processed fish. At present imported sea fish (hake, tuna, mackerel, herring) and domestic freshwater fish are processed in Hungary. Approximately 7% of the domestic landing is processed in plants, but considering the western European level, around 30–40% should be processed.

ASSESSMENT AND EVALUATION

Fish consumption habits in Hungary are influenced by a number of factors, the most important of which are: price, tradition, preference, fashion, taste, availability, personal factors, promotion, packaging and family habits. Consumer patterns and preferences are analysed by different methods all over the world. Hungarian research usually targets individual segments, and as a result there is no detailed analysis for the whole country. Thus our aim was to complete detailed as well as general surveys. The main objectives of the present study are the full-scale assessment and evaluation of fish consumption habits in Hungary, and also to reveal the strengths and weaknesses of this industry. The detailed objectives are:

- explore the structure of fish consumption patterns
- identify the potential consumer classes, determine their preferences
- assess parameters of domestic fish consumption at regional level
- describe the gastronomic features of patterns of fish consumption in Hungary
- determine the role of fish in the consumers' scale of preference
- investigate the consumer behaviour towards fish
- determine the features of domestic fish and fisheries products supply
- reveal the opportunities for increasing the consumption of fish in Hungary.

METHODS AND AREAS OF STUDY

In selecting the study areas consideration was given to characteristic regions of the country, where differences in patterns of fish consumption exist— in fish production regions consumption is higher than the national average. This has also been taken into account when defining the study areas and during the analysis, for example the town of Baja was separated from area 'E' since it has been foreseen that this location is the one that differs most from the average. The questionnaire survey was carried out in the following areas:

Area	Town/city and environs
A	Budapest
B	Debrecen, Nyíregyháza
C	Miskolc, Szerencs, Tokaj
D	Szeged, Békéscsaba
E	Kecskemét, Baja, Mohács
F	Pécs, Kaposvár
G	Zalaegerszeg, Keszthely
H	Győr, Mosonmagyaróvár

SURVEY FINDINGS²

Research on domestic fish meat consumption was based on questionnaire surveys (1250) and interviews with different players of the product chain. The most important target groups were: final consumers, people employed in fish retailing, general food retailers, catering personnel and fish producers.

- **Willingness to eat fish.** In the field of preference the consumers were asked whether they like fish in general. Of the three possible answers "yes", "no" and "I eat it if it is served to me", the third option incorporated the neutral answers (9%), i.e. those who are neither fond of fish, nor hate it. Those answering "no" (14%) and "yes" (77%) are, respectively, from area 'B' (Debrecen and Nyíregyháza) and from the town of Baja. In most Hungarian families there is someone who is not willing to consume some food, for example, fish. We asked the consumers if there was anybody in the family who is not willing to eat or absolutely dislikes fish — about 11% of the family members refuse fish dishes.
- **Preferred type of 'meat'.** The preference for the most commonly eaten meats (pork, beef, sheep, fish, turkey, duck, goose, chicken) was tested by using a 10-point scale. Zero was the neutral attitude and, according to one's preference the classification was by scoring positive (+1 to +5) or negative (-1 to -5) values. For example, if somebody likes, dislikes or is neutral to one type of meat, the score was +5, -5, or 0, respectively. The results show that chicken is the most preferred meat (with a mean score of 4.2), followed by fish (3.2), then pork (3.0), and turkey (2.8), beef, duck and goose followed — sheep (lamb) was the least preferred with a mean score of -0.2.
- **Reasons for not liking fish.** It is well known, and also shown by the results, that there are a number of reasons why some people are not fond of fish and fish dishes. The most important factors are:

Dislike the bones	41%
Do not like the smell	30%
Do not like taste	14%
Repelled by fish	9%
Allergic to fish	2%
Other	4%.
- **Frequency of eating fish.** In the survey, 42% of those questioned consume fresh fish, fried or as soup, etc. regularly, i.e. once a week (16%), once a month (26%), and 49% occasionally: 9% absolutely rejected fish dishes, and this value corresponds to that found when testing the preference. Men consume fish more frequently than women.
- **Preferred form of buying fish.** Fish can be bought alive or as whole fresh fish, or at various levels of processing, which at the same time also defines the price (Figure 2). Generally speaking processed fish is more expensive.

² Due to limitations in space only some of the results are shown here; the complete study is available from Debrecen Agricultural University.

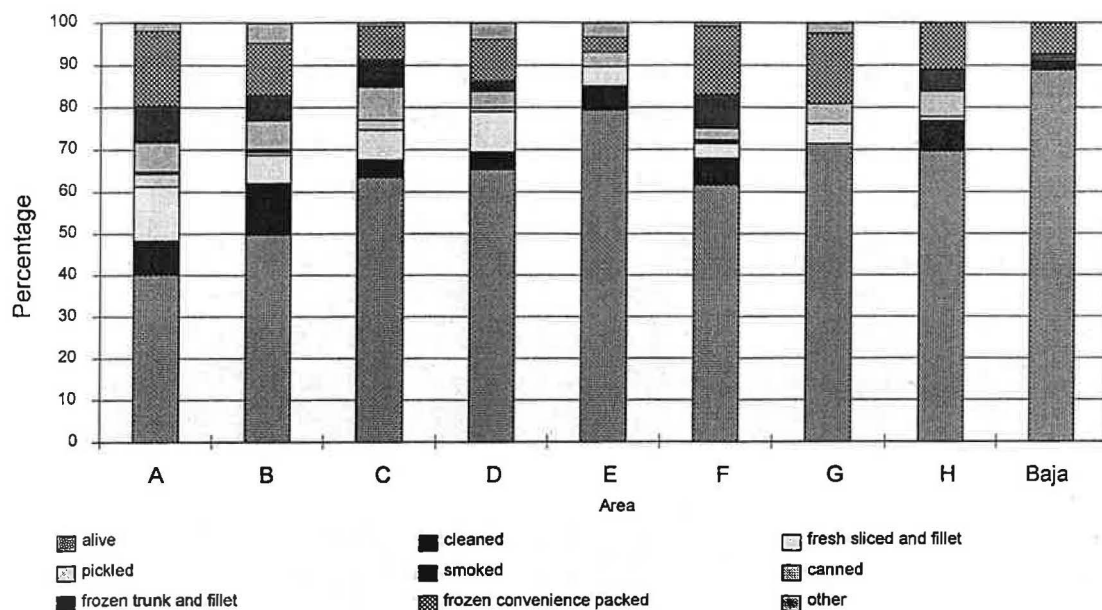


Figure 2: Form in which fish is purchased in the nine areas surveyed [this was originally in colour: reading the key from top left to bottom right corresponds to reading each chart from bottom to top]

- **Where fish is obtained.** Most live fish is bought from the fish shop (29%) or market (26%) although a considerable amount is actually caught by anglers (29%): the remainder is usually a gift or obtained from another source. It was shown that 40–50% of the people cannot buy fish easily, and housewives are unlikely to make any extra effort to buy fish while other meats are easily available.
- **Choice of fish dish for particular fish species.** One characteristic feature of the consumers' knowledge on fish consumption is the preparation of live or semi-processed fish. When asked which fish dishes are best prepared from a particular species of fish, only 18% responded "Yes, I know well" — the majority (47%) know for some species; 19% were unfamiliar with fish species and 16% unfamiliar with fish dishes.
- **Seasonal fish.** The 'Christmas fish' has special importance for domestic fish supply; it is an integral part of the Christmas fare even in those families where fish is rarely consumed throughout the year. Our intention was to find out whether fish eating at Christmas is characteristic for Hungary, and if there are regional differences in this habit. Responses to the question "Do you or your family prepare Christmas dinner from fish?" were:

Yes, always	42%
Yes, if we can get it	11%
Occasionally	23%
Never	24%
- **Target groups.** Target groups for fish marketing were established on the basis of gender with regard to availability, cleaning and preparation. Catching and cleaning of fish is the task for men, while preparation is done mostly by women. Thus, a well-prepared recipe will be welcomed by women, and cleaned fish are sold by men. In

areas where fish is consumed in large quantities all tasks connected to fish are done by men.

- **Difficulties in selling frozen fish.** More than one third of the respondents gave the high price to consumers as the reason for difficulties in selling frozen fish. Some 85% of the retailers questioned predicted an increase in the **number** of consumers if the price decreased: 80% thought the **consumption** of the existing consumers would increase if the price were reduced). Other difficulties were:

Limited demand	18%
Rigid consumer behaviour	14%
Not suitable storage	9%
Limited storage time	5%
Range of products	4%
Lack of products	4%
Unsuitable packaging	4%
Lack of local promotion	4%
Not suitable quality	1%

- **Competition with other 'meats'.** The competitiveness (saleability) of fish compared to other meats was also investigated; 44% stated that fish is difficult to sell and the most frequently given reasons were:
 - because of consumer/nutrition habits
 - not preferred by consumers
 - expensive
 - bought as complementary food
 - insufficient choice of fish species or product
 - seasonal demand (significant anglers' catch in summer)
 - Hungarians do not know the fish (species, preparation, etc.) very well
 - traditionally, pork is preferred.

FISH CONSUMPTION = HEALTHY NUTRITION?

During epidemiological studies of the past decades, it appeared that the frequency of cardiovascular problems in some coastal countries is less than in other, landlocked ones, for example, in Greenland heart attacks are almost unheard of. It has been found that the reasons are not genetic in origin but are the result of nutritional habits. Fish consumption of the Eskimos is extremely high (about 150 kg/person/year) and as the result of this the HDL-Ch (high density lipid-cholesterol) level of the Greenlanders significantly exceeds the average value of the developed countries.

A 14-years' study of 11 000 people in the Karolinska Institute concluded that death caused by heart attack was reduced by 9% and 30%, respectively, for those eating moderate and vast quantities of fish compared to those who eat hardly any fish. The chance of having a heart attack can therefore be decreased by increasing the consumption of fish. Promising investigations with silver carp and bighead carp showed a relative high proportion of omega-3 fatty acid content of the flesh in these fishes. The Hungarian Association of Nutrition Science also promotes fish consumption and considers a frequency of two to three times a week ideal for nutrition from a physiological point of view.

PROPOSALS TO INCREASE FISH CONSUMPTION

From the results it can be stated that one of the most important points in attempting to increase domestic fish consumption is to emphasise the favourable physiological effects of fish, and to incorporate this into systems and means aimed at encouraging consumption and selling. With an increased assortment of species, significant results can also be achieved, mainly among the consumers in the larger cities. It was found that fish is more marketable in the larger cities, since in rural areas there usually is some kind of warm-blooded animal in each household that can cover the need for meat.

In many cases the children who need fish as a rich source of protein and low fat meat are not given it because of the parents' fear of the fish bones. Public catering has great potential to increase the level of fish consumption.

Consumers must become familiar with the boneless domestic and foreign fish products, and the issue of 'bonelessness' should be given priority in marketing. If there are no bones in the fish or fish product, this should be marked on the product.

In terms of increasing fish consumption the two areas to consider are the particular product or the products requested by the customer, and a general aim to encourage fish consumption. The financing and organisation of the first fall to the individual enterprise or factory while the second, which is in the interest of the whole product chain, has to be financed co-operatively (co-operative marketing task). Since fisheries products are so-called health preserving foods, any action aimed at a nationwide increase in consumption requires governmental participation beyond the contribution of the players of the product chain.

CONCLUSIONS

- In the 1993 survey it was shown that consumers had little knowledge of fish species, bony species, prices, etc. — in 1997 respondents knew little about species but were aware of prices. It should be noted that fish is not one of the 'price inelastic' goods, meaning that increased price means decreased demand. Consumers find fish expensive; they would find the price at pond side acceptable in the case of carp.
- Hungarian cuisine lacks variety when it comes to the use of fish meat as a raw material: only five or six kinds of meals are prepared. As revealed by the survey, fish is generally consumed at home rather than in restaurants. Hungarian restaurants should not be treated as primary targets of marketing in the future; other than fish soup, fish does not compete with the traditional Hungarian meals. It can be stated that the frequency of fish consumption is rather occasional — except in towns such as. Baja and Tokaj.
- Both the domestic and foreign consumers differentiate between the so-called white and red meat types, and according to this fish meat and poultry meat are in the same group. According to our survey and international trends, it can be stated that fish and poultry are direct competitors.
- The hake and tuna fish proved to be more competitive in the fish markets than the domestic species, so it is not advisable to establish processing capacities using Hungarian carp and catfish as raw materials for competing products. At the same time, it is predicted that in the future the supply and demand of further processed fisheries products will increase in Hungary.

- It is typical of the Hungarian households that shopping is generally done by the housewives (80%) while the purchase and cleaning of fish is regarded as a 'masculine task' although with regard to the preparation of the fish, the situation is not so unambiguous.
- Most people in Hungary are not against eating fish, so the reasons for the low levels of fish consumption are not due to consumer preferences. The most important subjective factors which have a negative effect on consumption are the fish bones and the smell of the fish.

Issues and Prospects Related to the Fishing Industry in Turkmenistan¹

Hudayberdy Yakatov², State Committee for Fisheries, Turkmenistan

ABSTRACT

The industrial enterprises of the State Committee for Fisheries of Turkmenistan are distributed nationwide. Their main activity is fishing in the Caspian Sea and in the national bodies of water (rivers, lakes and dams), breeding freshwater fish for public consumption and breeding young fish to populate sundry bodies of water. Additional activities include populating dams with rare species of fish, processing fish for consumption and other purposes (bone-meal and fish oil). Turkmenistan has a potential annual production of 53 000 tonnes of mackerel from the Caspian Sea, which could also provide other resources that are not currently exploited, e.g. herring, grey mullet and crawfish.

INTRODUCTION

The fishing industry is based on a rich supply of raw materials and, therefore, production is likely to increase. From the Caspian Sea, Turkmenistan has a potential annual production of 53 000 tonnes of mackerel. However, because of the prevailing lack of technical facilities, the industry fails to yield such production figures: in 1997 mackerel production accounted for only 15–20% of this figure. The fishing fleet includes fishing vessels with refrigeration facilities, vessels with bone-meal and fish oil production equipment, and small fishing boats with nets. All these boats are used to fish for mackerel. Many of the fishing boats are being used far beyond their normal useful life. Therefore, all vessels requiring extensive repair or refurbishment need to be replaced with boats of better condition, suitable for mackerel fishing, and equipped with refrigeration facilities; the storage capacity in cargo holds is to be not larger than 200 tonnes.

MARINE FISHERY

Mackerel fishing in the Caspian Sea enables this country to produce large quantities of fish oil and bone-meal with a high protein content. Specialised vessels with modern processing technology for fish oil and bone-meal production need to be purchased. The Caspian Sea could provide other resources which are not currently exploited, e.g. herring, grey mullet and crawfish. Such products are much more attractive than the raw materials usually devoted to the food industry. There are definite possibilities to fish for herring, grey mullet and crawfish by attracting foreign companies. Moreover, possibilities of processing these for export to European countries should be looked into.

In the town of Turkmenbashi the fish processing plant has a processing capacity of 2000 tonnes of Caspian mackerel and 1000 tonnes of other fish. The main products are canned mackerel in tomato sauce and smoked fish. Eastern countries such as Uzbekistan,

¹ This paper was not presented at the Symposium.

² Hudayberdy Yakatov is the President of the Turkmenistani State Committee for Fisheries.

Kirgiztan, Tajikistan, Kazakhstan and China are good markets for Caspian Sea mackerel where it is in high demand.

Turkmenistan crops 133 tonnes of various species of sturgeon. All CIS (Commonwealth of Independent States) countries bordering the Caspian Sea crop their quota in the Volga (Russia) and Ural (Kazakhstan) rivers, the spawning ground of sturgeon species. Each year the sturgeon and mackerel fishing quota is analysed and approved in meetings of the Committee in charge of the management of the biological resources from the Caspian Sea. Each year the state-owned fish farming company enters into agreements, on sturgeon fishing, with Russian fish farms of the Volga Delta and with processing plants from Astrakhan Region.

Possibilities to develop mariculture are under study by organising fish farms with an annual capacity of 500 tonnes to produce sturgeon for public consumption. Joint ventures with western companies should be set up with modern technology for processing sturgeon and packaging caviar. A low-capacity production plant, with high standards of quality, will help us enter the international market as soon as possible.

The main objective of the industry is to increase fish crops and to process them locally, using modern technology of western companies, specialised in processing fish. This will enable Turkmenistan to produce an internationally competitive product and will increase its export market to Europe and eastern countries.

INLAND FISHERY

Besides the Caspian Sea, the fishing industry includes many inland bodies of water, covering an area of 250 000 ha. The main fish in these waters are bream, Caspian roach, *sazan*, pike-perch and cat fish. At present, 500 tonnes are reportedly cropped annually but there are real possibilities to increase production of inland waters to 2500–3000 tonnes. The inability to increase production is due to insufficient or inadequate fishing boats and equipment, and the lack of proper fish canning factories. In order to efficiently exploit the natural fish resources from inland waters, small fish canning factories need to be upgraded and modernised so that internationally marketable products can be produced.

Protection of fish resources, fishing planning and control of fish processing related to inland bodies of water are managed by the State Department of Fishing Control, under the State Committee of Fisheries. Several protected species, such as common sturgeon, rapacious carp, etc., inhabit these waters. The barbel is soon to be declared a protected species.

Two companies under the State Committee of Fisheries breed carp and other freshwater species for public consumption in bodies of water covering 1000 ha. The existing inland water fisheries need to be restored and new ones should be built or developed to increase annual production to 4000 tonnes of fish for consumption. Moreover, around 6 000 000 fish could be farmed annually in these inland waters.

INVESTMENTS

Successfully covering the financial needs of fish farming in Turkmenistan is largely referred to in the national investment policy. With the present economic situation, companies are unable to provide money from internal sources. For this reason external credits and foreign investments could greatly contribute to the development of fish

farming. Most of the external credits will be invested in building new companies for processing fish, upgrading the technology in existing companies and introducing new technologies for all production phases, and building new vessels and repairing the existing fishing fleet. One of the most important ways to stimulate and restructure production is to purchase new vessels and refurbish them, leasing the equipment that is needed.

Moreover, the Government has created ideal conditions for attracting foreign investors. Free trade areas, joint ventures and joint-stock companies are now opening in Turkmenistan. In accordance with the law, foreign companies and citizens can take part in privatisation and in eliminating the state monopoly in state-owned companies, which are to be turned into joint-stock companies, which in their turn will be auctioned or sold through investment tenders.

Foreign investors have the same rights as Turkmenistani nationals (legal and natural). On selling companies that need major cash injections through investment tenders, purchasers have the possibility to pay for the company within five years. The purchaser has full rights over the company after paying the first instalment.

IN CONCLUSION

The privatisation process will change the structure, ownership and management of the fish farming industry of Turkmenistan. Achieving these goals will stabilise the situation of the line companies and will make it possible for us to cover the demand of the internal market with a high quality production and with a wide range of products, which will enable us to enter the international market.

DISCUSSION

Dimitry Metsaev (Stanislav Company, Russia) — *Question to David Cleghorn*. When you were talking about advertising and the budget for advertising, is that budget sponsored by certain companies? And is this advertising of the fish produced by certain companies, or just the advertising of the fish itself? If it is advertising of the fish itself who is sponsoring that?

David Cleghorn (Sea Fish Industry Authority, UK). The individual companies pay for the advertising, however, they are not allowed to promote their product. We do forms of generic advertising, that are species specific, i.e. the promotion of herring and the promotion of mackerel: campaigns are more generic, for example 'Eat More Fish'. We do not care which form, where it comes from, what it looks like, as long as you eat more. All that money comes from industry, but they do not expect and we do not promote individual brand names. That is what they are there to do. This is additional money, from which they get a double benefit when they do their own promotion, Birds Eye do their promotion, as do Findus, and we add to it through generic advertising and grow the market.

Dimitry Metsaev. What is the average budget for this kind of advertising?

David Cleghorn. Our promotion advertising budget, bearing in mind our total expenditure for all that we do, such as technology development, aquaculture, etc., is about £8.5 million. We spend £4 million on advertising — half our budget is on advertising. That is how important we deem it to be.

Unidentified speaker. Could you remind me how this levy works? Is the levy compulsory, how is it calculated for each individual processor or producer?

David Cleghorn. The levy is compulsory on all fish landed by UK vessels in the UK and is also paid by importers of fish into the UK. There is absolutely no discrimination, everybody pays it whether they like it or not. We collect it — not the Government — through fish selling companies, primary importers and/or consignees of UK-landed fish.

Unidentified speaker. Is the levy related to the quantity of fish?

David Cleghorn. No, it is based on regulations, it is not *ad valorem*, it is based on different fish presentation forms, i.e. whole fish, frozen fish and there is a per kilo levy depending on the presentation form. It is laid down in Statute by Parliament.

Ian Watson (NRI). Does your levy from marketing include those levies which are raised, for example, through the salmon farming industry or Trout Producers Association?

David Cleghorn. No, they are not included in our remit. We receive levy only from whitefish and shellfish: we receive nothing from salmon or trout, they fund themselves.

Ian Watson. For general information for the meeting, there is also funding for specific products from agriculture in this country, which is funded by generally similar schemes.

David Cleghorn. No. Again I know quite a bit about agriculture, particularly in Scotland, where fish farming, salmon farming is funded by the taxpayer, i.e. it is funded by various development agencies in the west of Scotland, particularly in the Highlands of Scotland, through objective monies over many years. It is also funded by the Highland and Islands Enterprise body where most of the fish farms are located in sea lochs and fjords. There is a levy, which the Salmon Board expects its people to contribute to. But the funding systems for salmon are very different from wild fish. Indeed the very fact that they call themselves farmers would indicate their mentality.

Ian Watson. The point I was trying to make was that they use a similar system: that their advertising and their quality promotion scheme are based on a levy per tonne of production.

David Cleghorn. Indeed, but the levy does not pay for very much of that, much of the balance is paid for by the taxpayer.

Unidentified speaker — *Question to Yordan Staykov.* How big is the profit ratio, for example, if I produce carp?

Yordan Staykov (Thracian University, Bulgaria). At the moment the profit ratio in private fish farming is a minimum 100%, a 1:1 ratio. For example, I can give you exact data: if you have DM 1.5 as the expenses, you realise that from the farm DM 3 minimum. But for a 1.5-kg carp this takes 18 months. For most of our farmers this is six months as they are growing market-size fish. The growing season is end of March/beginning of April, depending on the temperature, to the end of October/end of December. They sell this fish to the international market. This is an international price. The price on our market is higher than the international market. I am speaking of retail prices that is DM 4.3 per kilo retail price in the shops.

I do not know how to explain the privatisation process in Bulgaria. For example, on one of the biggest fish farms of 300 ha there is privatisation of all the equipment, machinery and buildings but the land (300 ha) is for 23 years because there is no law for selling the land: there is a co-operative state-owned private land in this area and this is for 23 years. Many of the rainbow trout farms, some of them privatised, built some hotels on this river high in the Dobra mountains. It depends on the situation and the size of these farms.

Krishan George (Romanian Fisheries Project). In the privatisation you mentioned in Bulgaria, how is the privatisation associated with the rental or lease tenure for the land for 23 years? Was there a pre-condition for the purchase? For example, if I purchased the farm would I have absolute right for the land or could I just rent the land and forget about purchasing the assets?

Yordan Staykov. If I understood the question. Yes it depends on the farms, many of the trout farms were bought from the private owners. But as I told you, for the biggest fish farms and according to our present law, it is impossible to buy these fish farms, they buy only the machinery and all the equipment and buildings associated with the farm.

Krishan George. But if I did not wish to buy the machinery, could I still rent the land? For example, if a farm was associated with buildings, machinery, dams and dykes, could I actually rent the land without purchasing the land and machinery?

Yordan Staykov. No. This is all fish farm, the machinery, buildings and the land.

Unidentified speaker. Our friend from Georgia mentioned their Government's decision to change taxation in order to make the market more of a free market, to include the wholesale market situation and so on. But time and time again when you talk to people privately it is quite clear and, even now with the present crisis in Moscow, it is apparent that there is a lot of trade in Eastern Europe but also we have many examples in the West. Equally the way business is run, the way trade is done, the main incentive is tax evasion and or quota stretching. This is hardly ever mentioned. This is the first time I have ever heard it mentioned at any conference, and I have attended several which are concerned mostly with technical aspects but also with developing, in this case, marketing. A lot of discussion about fiscal policies, not fiscal policies, but pricing structures, how to present market plans and so on. Is there any forum in which matters of taxation and their impact on real life, on real trade, are discussed, or is that the remit of specialist economists behind closed doors?

John Ryder (EASTFISH). The best person to answer your question is winging his way back to Denmark, and I am afraid as a quality specialist I really do not know. If anybody from the floor maybe does or if John — John Dallimore or John Rogers — has any ideas?

John Rogers (NRI). Can I make an observation from our own experience? The fiscal policies and tax collection policies, certainly in Romania, are not always even-handed. Joint-venture investors coming into the country can get a number of tax breaks. Stefan will repeat in detail, rather bitterly, the fact that when importing second-hand equipment for processing he was charged 50% of the landed value — which is hardly an incentive to develop a business to provide more food for people and to create more employment. So I think this is possibly a subject that could be considered in the future. Whether you can effectively lobby your governments to change their attitude with regard to the collection of money is maybe not so easy. I think there are areas where

there is need for change, but again I would reiterate what John said, you will need to talk to a financial specialist.

John Dallimore (J.D. and Associates, Germany). From my experience of dealing with developing countries it is country-by-country specific. There is nothing that is generally available and you normally have to employ someone who is very familiar with the accountancy rules and regulations in the country that you are working in. Someone who is a specialist, for example, and is able to read between the lines of how best to do it, because sometimes it is possible, where foreign investment is involved, to get a complete tax break for maybe up to 10 years, to encourage foreign investment. So, if you are working as a joint venture, then you have a potential there for the joint-venture partner to bring his capital in and then to repatriate it without paying any tax at all and the company can do that in the period. It varies in so many different aspects, but I agree very much with both Johns, that you need somebody who is a specialist in your country to do it.

László Váradi (HAKI, Hungary). May I comment? You mentioned the developing countries and another speaker also mentioned his experiences in developing countries in Asia and Africa. I am one of those few experts from Eastern Europe who has been involved in agriculture development programmes in developing countries in Asia and Africa. It is very unfortunate that donor agencies sometimes, at least that is how we feel, put more effort on development programmes in these developing countries than in Eastern Europe. When we work in developing countries like in Laos or Vietnam they have much better facilities — laboratory facilities, audio-visual facilities, computers — than we have in Eastern Europe. This is just a general comment, I do not know how to exert any influence on these donors but if I may say a word about this. One possible solution is to start so-called West/East Sales programmes. I mean some Eastern European experts could be involved in programmes that are financed or run by western European donor institutions and executed by some western and some Eastern European institutions. Agencies and companies could be involved in such a complex programme. We have a three lateral programme in Vietnam, we have good experiences, and we may also emphasise the potential of such three lateral programmes in the future.

Ian Watson. László, thank you. I think that is a key point. Yesterday Chris Sealy used the term transition economies for Eastern Europe and distinguished between developed, developing and transition. I think Eastern Europe is different. Also the right programmes, the donor programmes are relatively new and there is no track record yet of working in the East European countries. In contrast, they have many years of experience in the developing countries. I think this is part of it. It is also from the British Government's point of view that the development funds that are available are focused on the poorest countries in the world. This tends to be many of the African countries and some in South East Asia, and this is where the priority is placed for the disbursement of funds.

One other thing that you mentioned is the tri-partite arrangements from your own experience working in South East Asia. We can also add one extra example — of a Romanian working in India — which I think was mentioned the other day. The first steps have been taken; maybe there will be a rapid expansion in the future. I hope so.

Frantisek Vacha (Research Institute of Fish Culture, Czech Republic) — *Question to Prof Yordan Staykov*. In your presentation you have mentioned several Acts which are accepted by Parliament. Do you feel that there are more Acts that are needed during the transition period to be compared with EU directives, or are you intending to accept the other laws or acts which would also be effective in Hungary?

Yordan Staykov. If I understand you correctly these Acts are in harmony with the EU, as they are very recent; these are actually confirmed Acts with the EU Regulations and legal aspects.

Unfortunately the recording system failed for the remainder of the discussion session.

SESSION 6
New and Added Value Product
Development

Chair: John Ryder
Rapporteur: Ian Watson

Improved Raw Material Utilisation and the Development of New Retail Fish Products

John Rogers¹, Natural Resources Institute, UK
Gheorghe Stefan², Steel '94 SRL, Romania

ABSTRACT

Several constraints were identified in the existing Romanian marketing system for fresh fish that not only limited consumers' ability to purchase, but also failed to provide what the customer wanted. Practical trials to develop and test-market new products to meet the identified demands and improve the return to the processor/trader were undertaken. The trials showed that a healthy demand exists for high- and low-value products that utilised virtually all of the Chinese silver carp. Overall demand substantially increased with a significantly improved financial return to the processor/trader. The concept was further developed to produce frozen, vacuum-packed products for sale through supermarkets. Within the first year, up to 300 kg of product per day was being prepared for supermarket outlets. Raw material supply and processing storage facilities currently limit production not market demand.

INTRODUCTION

The retail fish sector in Romania has seen a number of changes since the initial emergence of a free market, with an ever-increasing range of initiatives to develop and market new products and by-products. Throughout the communist period, fish production and marketing was controlled centrally, with very strong vertical integration within the state fishing societies. Generally they produced, distributed and sold their own fish. The main exception was where fish was supplied to the large processing societies that produced canned, cured and semi-conserved products, and relied to a significant extent on landings from the distant-water marine fleet. At the retail level fish was simply sold to the consumer on an as-supplied basis (usually through the shops of the parent society); no additional preparation took place in the retail shops. There were no small processing plants near the shops. Fresh fish was generally sold whole and only the largest fish were cut into pieces before sale.

THE CHANGING MARKET

Before 1990 most food supply was regulated at relatively low and affordable prices and, generally, demand vastly exceeded supply. The population tended to purchase whatever — and whenever — items were available; queuing was a regular event for many consumers, who had no choice but to take what was offered, as alternatives did not exist.

¹ John Rogers is a graduate freshwater biologist with extensive, worldwide fisheries development experience, particularly in post-harvest handling, processing and marketing. He is currently lead professional in Fisheries and Aquatic Resources within the NRI Natural Resources Management Department. For the past five years he has managed the UK Know How Fund Fisheries Project in Romania.

² Gheorghe Stefan is a graduate fisheries specialist from Romania. He has worked as a fisheries engineer and farm manager and, in 1985, became the State Fisheries Society General Manager. He resigned from the Government in 1994 and then started his own retail fish company (Steel '94 SRL) with one small fish shop in Bucharest.

Various changes have taken place since 1989 and are continuing at an increasing rate. With the many economic changes, the loss of full employment and substantial inflation, the ability of many consumers to purchase fish, even when it is available, has been significantly reduced. Many consumers no longer have the financial resources to consider purchasing a fresh fish of say 1–2 kg in weight — even the lowest value Chinese carp species. The unemployed and pensioners have been particularly hard hit as social security payments and pensions have tended to lag far behind inflation. In contrast to this, a small group of consumers (Romanian as well as many foreigners) has emerged where price is no constraint to their wish to purchase.

This is set against a situation where the production of fish in Romania has also fallen; the distant-water marine fleet which used to land up to 150 000 tonnes per year hardly exists any more. Capture from inland waters has also decreased, with fears being expressed that serious over-fishing has taken place and the resources are under threat. Inland aquaculture has followed a similar trend. A reduction of government funding, and continued state ownership and regulation have led to a substantial loss of production. In 1985 total fish production was estimated at 200 000 tonnes. The total for 1997 is estimated at only 16 000 tonnes.

In order to address the limited purchasing power of many potential fresh fish consumers, practical trials were undertaken to test-market fish cut into pieces, either as steaks or fillets. To do this effectively, fresh fish has to be prepared at, or relatively close to, the point of sale. With the limited distribution facilities available it was not feasible to consider fresh fish preparation close to the point of production, as the products would not reach the consumer in a safe and acceptable condition.

PRODUCT DEVELOPMENT

The contrast between consumers with severely limited purchasing power and the *nouveaux riches* presented a number of opportunities and posed a few problems. An additional factor was the anticipated demand for convenience products from the growing proportion of the urban population where men and women in the family unit were both in full-time employment. A number of strategies were developed to meet the demands of these very different extremes of the market.

Practical processing and marketing trials were undertaken with fresh fish, using the most commonly available aquaculture species, Chinese silver carp, to try and meet the varied demand across a range of consumers with vastly differing purchasing power. Products were developed that provided consumers with choice in the cut and size of the more expensive parts of fish, as well as the lower-value parts of the fish. As an example, silver carp could be presented as steaks or fillets, with a portion size of 125 g to 1 kg, depending on the size of the fish. In both methods of preparation the heads were removed: with the fillets, the backbone was also available as a by-product.

Processing

Initial trials with silver carp showed that there were consumers who were able and willing to purchase the higher-value steaks and fillet, but there was also a substantial demand for heads and backbones. In Romania, fish heads are traditionally used in fish soup and consumer acceptability for heads and frames was, therefore, not a problem. In fact, demand for heads was such that one processor/retailer asked (not too seriously) if two-headed silver carp were available. It was assumed that the richer consumers

purchased the higher-value steaks and fillets and the less wealthy purchased the heads and frames. To some extent this may be true, but it has also been observed that 'less wealthy' customers will also purchase the higher-value products, particularly if they are available in small portions.

The trials showed that demand exists for the pieces of cut, fresh silver carp. Romanian consumers were more open-minded to new forms of presentation than the trader had anticipated. Skin-off fresh fillets and small, steaked portions were completely new products to most consumers, yet they were almost immediately accepted. After the poor supply and very limited choice of the previous system, consumers were eager to try something new and different, even if it is based on a species with almost the lowest consumer preference when sold as a whole fish. In the retailer's experience (see the paper by Stefan in Session 1) the market for whole silver carp had been limited to small quantities per day. However, when processed into a range of 'cuts', large quantities of all the edible parts of the fish could be sold — sales increased from less than 50 kg per day of whole fish to 1 tonne of fish. This was particularly true for fish above 2 kg in weight, where demand and capacity to purchase whole fish of this size was limited. Silver carp of 1 kg or less in weight have a dry texture and are full of small, sharp bones — understandably they have a very low preference with consumers. The species is associated with the previous regime and is sometimes considered as an enforced introduction that replaced the traditional and highly appreciated European common carp. Cutting larger specimens into pieces seems to have overcome resistance to this species, although it must be admitted that Chinese silver carp fillets and steaks may be sold with a label that simply states 'carp'.

Preparing cuts of fish requires more labour and facilities and incurs more costs for the processor/retailer. However, experience has shown that these costs are more than covered by selling all the parts of the fish. In fact, processing silver carp is one of the most profitable activities undertaken at the retail level in Romania. There are other, traditional high-value species, but these are in limited supply and are expensive to purchase, with fewer opportunities to add value by simple processing.

Marketing

Initially, products from the processing trials were marketed fresh through the retailer's own shops. The next target identified was the emerging supermarket chains where a very wide range of food and other products was offered for sale under a single roof, but only canned fish were available. To comply with Romanian regulations, which require a separate section for fresh fish sales, pre-packed frozen products were selected. These could be sold from a separate, frozen display unit but did not have to be apart from other frozen products. A range of fillets and steaks from larger fish, whole and head-off smaller fish and smoked products was developed; they were packed in vacuum pouches and frozen. Free samples were supplied to all the major supermarkets (5–10 kg of each product) together with prices and delivery information. Response was positive and regular commercial orders soon followed. Production of fresh frozen products is now running at up to 300 kg per day (with a similar quantity of fresh product sold through the trader's own retail shops). Heads and frames are also sold fresh through the trader's own shops. Production is not constrained by demand but by the availability of raw material, processing and cold-storage capacity. Processing has, of necessity, been altered to meet demand and to use the available raw material.

Frozen products, unlike fresh fish, can be stockpiled and held for some weeks in cold storage, allowing a rapid response to orders from supermarkets and providing a source of fish for the retailer's own shops if fresh fish supplies fail or are inadequate.

Waste products

Only skins and intestines are left as waste products from the processing operations. The intestines have been supplied to trout farmers as a feed material and the market to tan fish skins for 'fancy' grade leather is being explored. If the 'waste' can be sold, even for a small price, disposal costs are reduced.

CONCLUSIONS

- An important aspect of the development of new products, both fresh and frozen, is that it has allowed the company to offer customers more choice and ensure that some products, even if not the whole range, are available from the beginning of every working day. A regular clientele can only be built up if customers know that they can always find a suitable product to purchase.
- Practical trials have shown that the consumers in Romania are receptive to new products and that there is a substantial demand for 'cuts' of fish in small, convenient portion sizes.
- A substantial market has also been developed for the lower-value by-products (heads and frames) from the processing operations, thus offering a spread of different value products to meet varying consumer purchasing power.
- Market demand for portions is far greater than for whole fish.
- Additional products increase choice for the consumer and stock availability.
- The processing operation provides additional employment opportunities.
- Added value processing provides a better financial return to the processor and increases turnover.
- It is suggested that the future for fish processing in Romania will be with small plants, situated relatively close to the retail centres, that are sufficiently flexible to respond to raw material availability and consumer demand.

Practical Training Courses in Fresh Fish Preparation, Presentation and Selling – Design and Development

Christopher Leftwich¹, Fishmongers' Company, UK
Carmen Moraru², University Dunarea de Jos Galati, Romania

ABSTRACT

Product shortages and lack of competition on the Romanian market in the past created a demand for every product that became available for sale, regardless of the presentation or the hygiene in production and distribution. Once the free market started, goods, including food, became more readily available and competition began. When customers are given a choice they become more and more demanding, and industry recognised the need to improve quality, and also the presentation and selling skills. Such improvements can be achieved only by specific training; the need for such training was identified by the Romanian Know How Fund Fisheries Project. At the special request of the Romanian Fisheries sector and authorities, a series of practical courses on fish preparation, presentation and selling techniques was organised and delivered. The positive feedback from participants, their employers and the Romanian authorities encourages such activities to take place on a more regular basis using domestic resources.

IDENTIFYING THE NEED FOR TRAINING

The situation in Romania is probably similar to many countries where there has, in the past, been a shortage of products. Shortages and lack of competition created a demand for every product that became available for sale; presentation was unimportant, selling skills totally unnecessary and food hygiene superfluous. With the arrival of the free market economy, some of these shortcomings were highlighted. Goods were becoming more freely available and private investment was beginning to create competition. This meant that it was fairly easy to identify a particular training need. When given a choice, customers will prefer to spend their hard-earned money in premises where they feel that they are getting good quality food, at a reasonable price and with good service.

TYPE OF TRAINING

The three main deficiencies identified were lack of preparation, lack of presentation and selling skills, and lack of knowledge on basic hygiene. In order to deliver the necessary training effectively, a few basic requirements must be met:

¹ Christopher Leftwich is an Environmental Health Officer, working for the Fishmongers' Company as Chief Inspector of Billingsgate Market in London where, for the past 14 years, he has been in charge of quality control and hygiene. He has travelled extensively as a consultant inspecting factories in various countries and lecturing on quality control, Hazard Analysis Critical Control Point (HACCP) and food hygiene; he is actively involved in establishing a seafood training school at Billingsgate Market.

² Carmen Moraru is a lecturer at the University of Galati and for the last few years has been involved in a series of national and international activities in food safety, most of them in conjunction with the Romanian Know How Fund (KHF) Fisheries Project. By the end of the year, she will receive her PhD in Food Science. Carmen presented this paper at the Symposium.

The authors have done important work together in recent years to help the Romanian Fisheries sector to improve their quality, safety and profit, by delivering practical training courses to different categories of staff. Most recently, they have been involved in training courses at the Central Institute of Fisheries Technology, India.

- a workroom and good supply of raw material for practical aspects of the training
- a classroom with basic equipment for the lectures on hygiene
- course delegates who were prepared to take on board the philosophy of what was being taught.

HOW THE TRAINING WAS DELIVERED

A series of three courses was organised in Romania. One of the main aims of the first course was to identify Romanian counterparts who could take over the running of the course. It was obvious from the outset that it would not be economically feasible for personnel to continue coming from the UK.

There were plenty of people from industry with the practical skills who were used to handling knives; all they lacked was the techniques required to prepare and present the product in different forms. To find suitable lecturers was more difficult as, outside of the educational establishments, the expertise and knowledge did not exist. In the UK, Environmental Health Officers deliver training courses on hygiene; it is a part of their training and they have developed the courses and course material. No real equivalent existed in Romania.

The course was intended to be directed towards workers at a basic level, which is considerably below the level at which the education establishments normally teach. However the involvement of a university in the project proved extremely beneficial as it raised the status of the course in the eyes of the industry managers who were being asked to support it.

Delivery of the course was by a series of practical workshops interspersed with lectures on food hygiene. The practical work was undertaken in a workshop environment; and role-play was an important aspect of the selling techniques. Lectures were delivered with the aid of overhead slides and videos. All the delegates were given course notes to supplement the lectures.

An experienced fishmonger from the UK oversaw the practical aspects of the courses. It was his responsibility to deliver the following:

- basic requirements of running a fishmonger's shop
- safety in the use of the equipment and care of tile equipment
- demonstrating and supervising the different ways of preparing the fish
- demonstrating the different ways of presenting the products for sale
- selling techniques
- identifying and training possible Romanian counterparts.

The food hygiene course was a series of lectures which covered a wide range of subjects to a very basic level including:

- what is food hygiene?
- food contamination
- bacteria
- food poisoning
- personal hygiene
- cleaning and disinfection
- pest control
- design and construction of food premises

- food storage
- legislative controls.

At the end of the course the delegates were set a series of tasks and were required to present a fish display that was judged by an independent adjudicator. They were also asked to sit a multiple choice exam paper and were required to answer 20 of the 30 questions correctly in order to obtain a pass. This was to find out if the delegates had understood the salient points that were made in the lectures.

LINKS WITH QUALITY CONTROL

Training is an integral part of any quality control system. Inspectors and auditors will scrutinise the training records of any company they visit and a failure to have staff properly trained could jeopardise future orders. A quality control system is only as good as its weakest link: it is pointless having modern hygienic premises if the workers do not understand the basic principals of hygiene. Any worker who forgets to wash their hands after going to the toilet could end up causing the business to close down if, as a failure to do so, this results in an outbreak of food poisoning.

ADVANTAGES OF TRAINING

- **For the individual.** In the past training has been directed at management level. This training was delivered at a basic level to workers — this was fairly unique. Workers' needs were being considered. Their level of knowledge and skill was improved considerably as a result of attending the course, and in obtaining a basic food hygiene certificate they had a qualification that was transferable. It also raised their self-esteem.
- **For the company.** Giving staff the opportunity to train provides the company with a more motivated workforce who are able to utilise their skills for the mutual benefit of themselves and their company. There is likely to be less turnover of staff, as they are more likely to remain with a company that is catering to their needs. Motivated staff results in greater productivity which, in turn, results in more profit to the company. Lower staff turnover will in the long term mean reduced costs in having to train new staff.
- **For the consumer.** In a society where competition exists and the consumer has a choice, customers will prefer to shop where they perceive that they are being treated with courtesy and respect and can shop with confidence. They will be offered more choice of product that is prepared to suit their needs and will be served by trained personnel.

INDUSTRY AND INDIVIDUAL RESPONSE TO THE TRAINING

The individuals' response to the training was excellent. All the delegates who attended one of the three courses were very positive about what they had learnt. They felt that they were appreciated by their employer and were grateful that their employer had invested in them as individuals.

The industry response was extremely encouraging. A few shops that had put into practice some of the things that had been taught on the course reported that the changes had resulted in increased turnover. Offering customers a greater choice by portioning

and filleting had increased their customer base. Consumers, who liked fish in the past and could not afford to buy a whole fish, simply did not eat fish; by offering portions they can now afford the product. Also, consumers who like fish, but not the bones, can now purchase a fillet. The other advantage to the shop owner is that they are able to increase their profits by being able to charge proportionately more for portions and fillets than they can for whole fish.

DISCUSSION

Alexandr Kachowski (PISCICOLA Association, Republic of Moldova) — *Question to John and Carmen.* The practice of the 1970s has shown that not all good ideas were able to create a marketing situation suitable for implementation in our countries; for a free market economy, they must mature before implementation in our country. Are you sure that all these ideas, from my point of view, very interesting and very good ideas about raw material utilisation, as well as training courses, could find a real basis for their implementation? Are you sure that they could create this marketing situation when they would be implemented in our countries. For example, are you sure that this most impressive, materialistic scheme that somebody will decide to produce in spite of usual practice, to go to Istanbul to buy and to sell it in Moldova and Russia and so on? Additionally are you sure, Miss Carmen, that you will be able to find financial support for your very good and interesting training?

Carmen Moraru (University of Galati, Romania). We were not sure about the success of our training and experience until we did it. But we had the opportunity to test it on the market, on the Romanian consumer, and we saw that it was successful. Although we anticipated success we could not prove that until we had actually presented the courses and got the reaction of the companies. Regarding the financial aspect, I think that if the companies are sure that their profit will increase as a result of this training, they will be prepared to pay for it because it is not that expensive. In our situation, if the training were organised by fisheries on site, this would reduce the actual cost of the training, because people from that particular company could be brought to the training. So you just forget about a lot of cost of bringing people in there, and at the end of the day, this could be done and it is not very expensive.

John Rogers (NRI). The original trials were done because of problems that had been identified with selling a particular species. The results of the trials were published and distributed to the fisheries sector. It was in response to their expressions of interest that the training was organised and, in fact, and as the courses were for practical, manual training, we decided that 12 people per course would be enough. People using sharp knives need watching carefully! In fact we ended up with 20 people per course to meet the demand and the skill base has now, we hope, been transferred into the Romanian system.

Frantisek Vacha (Research Institute of Fish Culture, Czech Republic). It is true that we have to meet the consumer demand and the presentation now was an excellent example. I would like to ask if you feel that the prospective way is through special fishmongers or special shops where fish is sold, or through a chain of supermarkets. How do you feel the future of demand will be?

John Rogers. I suspect you will follow the same route as us in the West, where the supermarkets will move in and take an increasing share of the market. But what has struck me from my experience working in Eastern Europe is that the consumer is incredibly open to new products and is adventurous. Maybe this is a reflection of years when choice could not be made: they had to take what was available. I go back to the first trials where we simply put the fish on display and went out for a beer, came back one hour later to see the last piece of fillet disappearing out of the shop. Then it went into production the next day. So the consumer is open-minded and receptive to new products, the supermarket was a logical progression. The supermarkets were there, they were not selling fish. It was an opportunity to be exploited. I think the supermarkets may make life much more difficult for the supplier in the future as they increase specifications and negotiate harder on price, but at the moment it is quite attractive.

Hassan Kilic (National Liaison Officer FAO EASTFISH, Turkey). I would like to congratulate you for preparing and undertaking such training. This is a remark rather than a question. In the transition period the Eastern European countries knew to create a variation in the society, so that the people can see there are some developments and they can motivate themselves, adjust themselves to the changing conditions. So this kind of small training for pilot projects is more convenient than those having large components to be implemented.

Gheorghe Stefan (Steel '94, Romania). I would like to make a comment. What do you plan in Romania? In my company, you hear nothing is new, it is not a new invention — fillets and steaks were processed in the past. What is new is that we produce them in front of the customers and this is successful with the customers because we meet their personal requirements and they feel in control. They have the possibility to see the fish alive or very fresh, or they can have it processed in the shop in front of them. It is successful. In my company, I as Manager know exactly what you want but it is important to train the rest of my staff. For example, none of my managers has a fisheries background — my Sales Manager has computer skills, one of the managers was working in the heavy metal area — so appropriate training is essential. In my opinion, good training is a guarantee of good products. So if you want training for your trainers you have to do it right from the start otherwise it is a waste of time.

John Rogers. Can I come in on that? One of the objectives of this training was to provide hands-on, practical training for workers. Much of the other training that had gone on was targeted at managers. The managers were not the people who would actually be handling the fish and cutting them up. Fish processing, filleting and steaking is a manual skill — there are a number of ways to do it and it takes practice and ability. So we felt that it was important to get this training to the worker. Stefan has just mentioned an important point. Under the previous regime all fish processing tended to take place in large, centralised factories and at the retail level the final product was delivered for sale, but no further work took place at the retail level. We hope that we are heading towards the situation where, at the retail level the customer can ask for what they want. If you want your fish gutted, or head-off, or filleted, it can be done for you. It is part of providing service.

Carmen also mentioned the basic hygiene course that was part of the overall training course. I reiterate the point, if HACCP is to be introduced it will be almost impossible if the workers do not have some basic understanding of what hygiene is. It is all very well for the managers and supervisors to design control points and draw diagrams and so on. If the workers do not know how to keep the plant clean and what they need to do to maintain temperature control and work hygienically, then the system is going to lead to all sorts of problems. It was another attempt to try and tackle the problems at a range of levels, hopefully to lead to an integrated solution.

Closing Session

SUMMARY OF THE SYMPOSIUM

This Symposium has obviously generated a full and very free exchange of views in the various sessions and I suspect, more importantly, from the informal discussions which you have all had outside the sessions. Several people have reminded me that this meeting has provided one of the few occasions where representatives of a large number of countries of Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) can actually meet together for a few days and discuss problems confronting them. How they are getting on, what progress they have made and, maybe, what they have learnt could be of value to their colleagues in other countries. I do not propose to attempt to summarise the various sessions beyond indicating where I believe a need was highlighted in the presentations of the papers and the discussion that followed.

The first session was on finance for fisheries enterprises. As a fish processing technologist I am much happier with a knife in my hand than a calculator trying to work out balance sheets, but it was very obvious that finance, and access to that finance, is a key concern for many of the countries. Also, the need to be able to prepare business plans that the banking sector or credit providers will actually look at is of great importance. I think Bent Larsen did a superb job in running through the key points on this. It lead on fairly naturally to the second session when we considered business management training, experiences from a number of countries and also presentations on initiatives that had been taken in some. It would certainly seem that acquiring business management skills is a need for absolutely everybody in order to survive in the free market in the future and to run viable enterprises. With these skills you will know what is happening and you can guide them towards achieving real profit.

There seems to be particular interest in the BROCAD distance learning business management course as a mechanism to provide training for managers and specialists scattered in the country, not necessarily in centres of population. It was one means of allowing them to gain access to this sort of training. I think also that the training needs assessment/analysis lead on from business training to other technical subjects, all of which are important. From what was said, am I correct in believing that many people would like to see the business management course made more widely available, or at least to have access to the course to consider whether it could meet your needs?

One thing that Chris Sealy made very clear was that economies/countries in transition are not developing, nor are they developed. They are a particular category that is quite unique to the area, with their own particular needs, problems and characteristics. Chris, I think, made the point very clearly that training has to be tailored to meet the needs of the particular countries. I support that view absolutely. There has to be, I believe, a participatory exchange between the people who are receiving the training and those who are in a position to help provide it, to ensure that what is provided is what is wanted and is provided in an appropriate way to meet those needs.

Quality assurance and hygiene are obviously of concern to all of you, both in terms of developing your international trade and complying with international regulations. For

many of you, whose countries have begun the process of applying for membership of the EU, there is the additional challenge of bringing all the legislation, regulation and practise into a compliant state with the EU. There is obviously a lot of work going on in many countries, some have made more progress than others but I think there is certainly a continuing and major need to have access to information. This I believe was a theme that came out of the whole meeting — that access to information is critical in many respects. One or two people have suggested that it would be extremely useful to establish a network to allow more effective communication, so that you can keep in touch with one another, exchange information and find out what is happening. The EASTFISH magazines and their other work have made a major contribution to helping this process. I think there are still many more possibilities to take this forward and I would appreciate your views on how you think this might be done, or indeed if you think it is necessary.

The topic of total quality management and HACCP, including current international trends, its application and provision of training, as with most topics, provoked considerable discussion. Is there a general need for more work on training in HACCP? I am aware that EASTFISH has published a number of articles on HACCP. One of the things that we have been looking at is to find support to publish a practical manual on how to use HACCP in the factory situation. It would be very much a practical 'do-it-yourself' guide, with step-by-step guidance and outlines or pro formas, etc. to lead you through the steps. Would something like this be of interest to you and would there be a demand from your countries for publications like this? One way of publishing would be to issue it on CD-ROM so that individual countries could alter forms to meet the particular requirements of any plant that they are working with. Obviously no two plants or two production lines are exactly the same and it would be necessary to tailor flow diagrams, etc. to meet specific requirements. Courses, almost by definition, have to be generalised, certainly if published on paper.

Another area that stimulated considerable discussion and raised a number of issues was the marketing of fish and fish products. Presentations covered the current situation in three of the member countries; there was also an overview by David Cleghorn of how fish and fish products are advertised in the UK, and John Dallimore gave a direct, practical description of developing marketing concepts. The financing of Seafish in the UK generated a lot of interest, as it is a levy on the industry which provides a significant amount of money. Is there any need to develop similar materials for each of your countries, are there the organisations in place that could do this? In Romania, which I am familiar with, the Fish Producers' Organisation has considered publicity for the promotion of fish and fish products. They are always constrained by lack of budget but I wonder if that is the general case for all of your countries?

I then gave a personal presentation of a much more unstructured approach to marketing, but again this was carried out as a trial — an experiment — and the results of the experiment were put on sale. The consumer accepted the product so it rapidly went into commercial production. I approached that work from the viewpoint of a project manager, I was provided with the funding to look at new, possibly novel products. I did not have to make a profit for the provider of the funds, all I had to do was show that I had spent it wisely. New and added value product development was mentioned by a number of speakers: I think Bulgaria was suggesting that this was a way forward.

The final paper on the practical courses in fish preparation, and also the certificate in basic hygiene, provided an example of intervention at the worker level — the people who actually do the jobs in the factories. I consider that they are an equally important

part of the system. Industries do not survive with just managers. If the business is to be successful the people on the production lines have to work effectively and efficiently.

I will mention yet again the questionnaires. A number of them are now being returned. I would request that all of you give me your views; and please say if you think it was a waste of time — that is as important as an encouraging response. If you do not like it please say so. We can learn from what has been done badly, as we can learn from the things that have been done well.

This will, I hope, be a first meeting and not a one-and-only meeting. I realise that it is not easy for you to meet to spend a few days together and have a chance to talk and discuss. Travel costs can be prohibitive and finding the hard currency to attend meetings can be a great difficulty. If you think this meeting has been of value then we are very pleased. Would there be a need for a further meeting, and if so when and have you any suggestions for an agenda? The topics for this meeting followed on from the experiences John Ryder and I have had over the last year or two. The intention is to provide assistance, wherever possible, to your countries by meeting your demands. As citizens of your countries, you know far more about it than we do, so please guide us towards what you think is needed and we will jointly do our best to try to find a donor to provide the necessary cash for things to happen. I know that sounds a mercenary approach but without the money it will not happen. So please give us as much advice and guidance as you can. My personal experience of the donors is that if I go to them with a suggestion for what I would like to do, their immediate response is, "Oh, you are just looking to get some more money for employment out of us". Whereas, if you ask, they can say, "we are responding to a demand from the client countries" and they are much more receptive to responding to your demands than my suggestions. So if you have any views, let us have them and we will proceed from there.

Before I finish, are there any suggestions or comments from the floor?

John Rogers
Head, Fisheries and Aquatic Resources Group
Natural Resources Management Department
Natural Resources Institute

FINAL DISCUSSION

John Ryder (EASTFISH). I would just like to comment on dissemination of information as it does lead quite nicely into one option, which is fairly obvious as an alternative, since we are now part of the information super-highway. Many of you may have visited our existing site on the WorldWideWeb but may not have found it too exciting. It is now undergoing a significant redevelopment with professional specialists. We plan on using the WorldWideWeb extensively to try to make EASTFISH a 'one-stop shop' for central and Eastern European fisheries information. We will at some stage look at trying to make money from the website in terms of seeking sponsors to pay for various pages. Initially it will provide information about all the countries of the region, for instance, and provide marketing information. It will have a 'hot news' section reporting the latest news and developments. We hope the prototype will be ready very soon and the final version should be available in the next few months. Hopefully we can use it to facilitate the network. It should be a good starting point — we clearly want to make it a useful site. We will, for example, be directing other people who are interested to the information sources that NRI has on their web pages.

We do not want this to be purely an EASTFISH site — it will be an information site. So anybody who has any ideas about what they would like to see on the site please, please get back to us today or by e-mail, letter, fax or phone. When it becomes available and you have had a chance to browse through the pages, please tell us what you would like to see more of. We have a wealth of information coming in that we cannot publish in the magazine, so there are opportunities for putting a lot of information up onto the web.

John Rogers (NRI). Access to information is critical for almost everybody today. As a point of interest (from a show of hands) how many people actually have access to the Internet? So we are talking of half and within another six months I am sure everybody will have access as it is developing that rapidly.

John Dallimore (J.D. and Associates, Germany). John, there is just one thing that I would like to say. I think it would be very useful to develop the contacts that have been made here. If everybody could leave a business card, or a contact address, or some information on how they can get in touch with each other, an address list can be compiled. This can then be passed on to all participants so that they have a complete list of who was here, their department, their contact address, etc. and they can make further contacts in the future.

John Rogers. Thank you for that suggestion. I think, in fact, that we have that information to hand already. Everybody has sent in faxes, e-mails, etc. in registering their wishes to participate in the meeting. What I can offer to do is to ask Claire to provide all those details for inclusion in the Symposium proceedings, which will be sent to you at a later date.

John Ryder. We at EASTFISH can also add this to our quite large database of over 10 000 persons and ensure that you are all on our mailing list for information that we send out. [John also told the participants about the then forthcoming East/West Conference, organised by Agri Europe and EASTFISH, with a focus on investments and markets, to be held in Copenhagen in November.]

Sonja Zlantanova (Ministry of Agriculture, Forestry and Agrarian Reform, Bulgaria). Thank you very much for this gathering, thank you for all your efforts now and over the

past year, and I would also like to thank you for the invitation to the Conference in Copenhagen. I would like to make a suggestion. When we organise future meetings, where it is possible, let us move a little bit eastwards and hold them in the CEECIS countries. Conferences organised in western Europe are rather expensive for the Eastern Europeans and I do feel that it increases the problems for our counterparts from the western countries as well, and even for EASTFISH. So thank you again and hope to see you soon in Eastern Europe.

John Rogers. Thank you very much and I accept that point that if there are any subsequent meetings then we should look for one of your countries to act as host.

John Ryder. On that issue, we did actually raise this, and contacted all the participants at the previous two East-West Fisheries Conference Meetings, over two thirds of whom were from central and Eastern Europe. We sent all of them a request and gave five options — two were in the west and three in central and Eastern Europe — and 80% said that they would prefer to come to Copenhagen. We were actually quite surprised, I think Budapest, St Petersburg and Moscow were three of the options, but I take your point. From the previous two meetings it is also apparent that the next meeting is actually cheaper than the first two East-West Fisheries Conferences. I do understand that USD 500 plus is a significant amount of money, but perhaps there may be some flexibility for waiving fees for those who contribute to and/or participate actively in the Workshop.

Ante Dujmušić (Ministry of Agriculture and Forestry, Fisheries Directorate, Croatia). Before you close this last session despite the fact that I am from a young generation here, I would like to say a few words. First of all I really have to express my, and I believe our, gratitude to the organisers for such a successful and I can say, especially from me, significant meeting. On these occasions it is unusual to mention any names but I would like to mention at least one but it will be better if I mention two names — first of all Miss Claire Troy and secondly Mr John Rogers. Once again I thank you in my name, and thank you on behalf of all those participants here on the floor and I believe that we should say at least a word for the organisers with some smaller word but larger applause. Thank you once again.

John Rogers. Before I hand over to Professor Blake to close the meeting formerly, one minor point regarding information. The NRI is still able to respond to technical enquiries from official organisations in overseas countries. We have a limited amount of funding available to us to respond and we have access to a large library, particularly on post-harvest fisheries topics, but with the modern electronic systems information of all sorts is fairly readily available. So if you think we can help you, if you think that we can give you an opinion on a technical problem, please do not hesitate to contact us. It would help if the letter is on official paper or the e-mail indicates that it is from a research institute, or a Ministry, or similar organisation. We still have a limited capacity to do this and we would always try whenever possible to service any requests.

Finally I wish to express my thanks to my colleagues within the National Resources Management Department, the various people who agreed to present papers and to each of you for taking the time to attend the meeting. Particular thanks are due to Claire and Madalina: their hard work and organisational skills have made the smooth running of the meeting possible, including arranging duplication of papers, sometimes with translation, arranging transport to and from airports and booking the accommodation. I think the two young ladies deserve our thanks for all their efforts — their quiet but very efficient work in the background has helped to make it all happen.

CLOSING ADDRESS

Ladies and Gentlemen. It has been a great pleasure and honour to have such a large gathering here from so many countries in Eastern Europe. The lesson that I have learnt as much as anything is the sheer potential of the relationship between these two parts of Europe in terms of the ideas. In the East there is so much expertise and experience which has been unavailable to us in the West for so many years and I hope that the same is true in the other direction. The number of ideas that people have proposed to me, to John and to others over the last few days has made it very clear to me that there is enormous potential to mix those two sets of experience and expertise. If nothing else comes from this meeting, I think that we must follow up some of the very specific opportunities that have been presented for collaborative projects in Europe in the fisheries sector, on the one hand, and in the national resources management sector in a more general sense on the other. One thing that we have learnt in this Institute in the last few years is that we cannot just look at the fisheries sector. We have to look at the catchment areas, the watersheds, the forestry and the utilisation of the resources that all impact on the fisheries sector, and the production. And I think that in the wider picture is where we have scope to mix and match our expertise from the two parts of Europe.

Again, many thanks to you all for coming such a long way. It has been a great pleasure to have you here. I have learnt a lot from you and sincerely hope that the Symposium has been worthwhile. I wish you a safe journey home.

Professor Barry Blake
Head, Natural Resources Management Department
Natural Resources Institute

APPENDIX 1: Product Standards, Packaging and Labelling

STANDARDS FOR FISHERY PRODUCTS

The EU is introducing new standards all the time; it is therefore essential that all prospective exporters to the EU keep themselves fully acquainted with any changes that are introduced. There will of course be other and perhaps more stringent standards imposed by individual companies. In addition there will be quality standards agreed between the parties undertaking the transaction.

The following standards are those that are legally required at the time of writing.

Parasites

All fish and fishery products must be checked for the presence of parasites and any product that is obviously infested must not be placed on the market. The accepted standard is: no more than 3 worms in 7 lb (3 kg) of fish.

Chemical standards

> TVB-N (total volatile basic nitrogen)

The following limits must not be exceeded:

- > 25 mg of nitrogen per 100 g of flesh for the following species:
Sebastes spp.
Helicolenus dactylopterus
Sebastichthys capensis
- > 30 mg of nitrogen per 100 g of flesh for all members of the family Pleuronectidae, except halibut
- > 35 mg of nitrogen per 100 g of flesh for the following species:
Salmo salar
All Merlucciidae spp.
All Gadidae spp.

> TMA-N (trimethylamine nitrogen)

There are no standards set at present but they may be introduced in the future.

> Histamine

The limits apply to fish species of the following families: Scombridae, Clupidae, Engraulidae and Coryphaenidae. Nine samples are to be taken from each batch and must fulfil the following requirements:

- > The mean value must not exceed 100 ppm
- > Two samples may have a value of between 100–200 ppm
- > No sample may have a value exceeding 200 ppm.

> Mercury

The mean total mercury content in fishery products must not exceed 0.5 ppm in all edible parts of the product except for the species listed below where the limit is raised to 1 ppm in all edible parts of the product:

Sharks (all species)	Sturgeon (<i>Acipenser</i> spp.)
Tuna (<i>Thunnus</i> spp.)	Halibut (<i>Hippoglossus hippoglossus</i>)
Little tuna (<i>Euthynnus</i> spp.)	Redfish (<i>Sebastes marinus</i> , <i>S. mentella</i>)
Bonito (<i>Sarda</i> spp.)	Blue ling (<i>Molva diperygia</i>)
Plain bonito (<i>Orcynopsis unicolor</i>)	Atlantic catfish (<i>Anarhichas lupus</i>)
Swordfish (<i>Xiphias gladius</i>)	Pike (<i>Esox lucius</i>)
Sailfish (<i>Istiophorus platypterus</i>)	Portuguese dogfish (<i>Centroscymnus coelopsis</i>)

Marlin (*Makaira* spp.)
Eel (*Anguilla* spp.)
Bass (*Dicentrarchus labrax*)

Rays (*Raja* spp.)
Scabbardfish (*Lepidopus caudatus*, *Aphanopus carbo*)
Anglerfish (*lophius* spp.)

➤ **Poisons and toxins**

Poisonous fish of the families, Tetraodontidae, Molidae, Diodontidae and Canthigasteridae, and any fish containing biotoxins, such as ciguatera, are not permitted to be placed on the market.

Temperature controls

- Fresh or thawed fishery products and cooked and chilled crustacea and molluscs must be kept at the temperature approaching that of melting ice, i.e. 0–4°C
- Frozen fishery products must be kept at -18°C in all parts of the product. However a brief upward fluctuation of not more than 3°C is permitted during transport.
- Processed products must be kept at the temperature specified by the manufacturer.
- Smoked fish must not be kept at a temperature higher than 8°C
- Vacuum packed product must not be kept at higher than 4°C

Microbiological standards

These are applicable to cooked crustacea and molluscan shellfish.

➤ **Pathogens**

No *Salmonella* in 25 g

➤ **Organisms indicating poor hygiene (shelled or shucked product)**

<i>Staphylococcus aureus</i>	m = 100	M = 1000	n = 5	c = 2
Thermotolerant coliform	m = 10	M = 100	n = 5	c = 2

➤ **Indicator organisms**

Whole products	m = 10 000	M = 100 000	n = 5	c = 2
Shelled or shucked product (not crabmeat)	m = 50 000	M = 500 000	n = 5	c = 2
Crabmeat	m = 100 000	M = 1 000 000	n = 5	c = 2

Note

m = limit below which all results are satisfactory

M = acceptability limit beyond which the results are unsatisfactory

n = number of units comprising the batch

c = number of sampling units giving bacterial counts between m and M

STANDARDS FOR LIVE SHELLFISH

Standards for live shellfish intended for immediate human consumption:

- Shells to be free from dirt, an adequate response to percussion and normal amounts of intravalvular liquid.
- Must contain <300 faecal coliforms or 230 *E. coli* per 100 g of flesh
- No salmonella in 25 g flesh
- No toxins etc. in excess of the permitted daily intake (PDI)
- Upper limits of radionuclide must not be excessive
- Paralytic shellfish poison (PSP) must not exceed 80 µg per 100 g of mollusc flesh
- No diarrhoeic shellfish poison (DSP)

PACKAGING AND LABELLING

Packaging

The packaging will depend on the type of goods being offered for sale i.e. fresh, frozen, processed, live, etc.

> Frozen

- > The packaging must be completely airtight to avoid freezer burn: it is preferable that any polythene wrap used around the product is coloured. This will avoid any possibility of the wrap being passed across to the final consumer should the product be intended for further processing, i.e. frozen product intended for breaded. There have been occasions where the consumer has found the polythene — because it was clear — between the coating and the fish.
- > No metal staples are to be used on any of the packaging.

> Fresh

This will depend on how the product is being transported.

- > Expanded polystyrene is generally the most acceptable material due to its insulation qualities. However, waxed cardboard has proven to be satisfactory for airfreight where the product is not going to remain in the packaging for any considerable periods of time.
- > It is a requirement for the boxes to have drain holes to prevent the fish from lying in their own melt-water. This is not acceptable for airfreight, where the boxes must be leak-proof; for airfreight it is advisable to have a good quality polythene liner around the fish to prevent any leakage from the packaging.
- > Ice is undoubtedly the best medium in which to place fresh fish. Again though, for airfreight dry ice and gel packs have proved to be good substitutes.
- > Controlled atmosphere packaging (CAP), the use of three gases, carbon dioxide, nitrogen and oxygen in controlled measures, is extremely popular with some of the large multiple retailers.
- > Vacuum packaging; is also a preferred form of packaging with many of the large multiple retailers.

Temperature is extremely critical for both CAP and vacuum packaging and even small upward fluctuations in temperature can have an adverse affect on the product. Temperatures above 4°C could prove extremely dangerous due to the possible presence of *Clostridium botulinum*.

> Processed

The type of packaging will depend upon the nature of the product.

> Live

- > The packaging must not impair the survival of the animals. Ensure that the animals cannot damage themselves during transit. Make sure that they are cool and the atmosphere around them is moist to prevent rapid drying of the gills and subsequent death of the animal.
- > It is a legal requirement to pack oysters with the cupped shell downwards.

> General

Packaging material it must not in any way impair or contaminate the product, and it must protect the product from becoming contaminated.

Labelling

It is a legal requirement that all goods are labelled with certain information. Without prejudice to the provisions of the Food Labelling Regulations 1996, it must be possible to trace the establishment of dispatch of the fishery products for inspection purposes. The following information must appear on the packaging or, in the case of a non-packaged product, in the accompanying documents:

- The country of dispatch, which may be written out in full or shown as an abbreviation, using capital letters. For EU member states the following abbreviations may be used: B-DK-D-EL-E-F-IRL-I-L-NL-P-UK-AT-FI-SE.
- Identification of:
 - The official approval number of the establishment or factory vessel
 - If from a freezer vessel within the European Economic Area, the identification number of the vessel
 - Or the registration number of the wholesale or auction market

All letters and figures must be fully legible and written in indelible ink, and grouped together on the packaging in a place where they are visible from the outside without any need to open the packaging.

All pre-packed goods must conform to the Food Labelling Regulations 1996 and include — as an absolute minimum — the following information written on the label in English:

- Name of the product
- List of ingredients in descending order of weight
- Name and address of the registered manufacturer, packer or seller in the EU
- An indication as to the minimum durability of the product and, if this does not appear on the main label, an indication as to where it does appear on the package.
- Any storage instructions e.g. keep refrigerated 0–4°C
- Country of origin.

It is not compulsory to include nutritional information at present, but this may of course change in the future. It may also be a future requirement to declare the net weight of products in, for example, frozen glazed products or battered products.

All packages of live bivalve molluscan shellfish must be accompanied by a health mark which must contain the following information:

- Name of the product, both common and scientific names
- Country of origin
- Number of the purification or dispatch centre
- Packing date
- Durability date or words to the effect 'these animals must be alive when sold'.

Compiled by Christopher Leftwich
Fishmongers' Company, Billingsgate Fish Market

APPENDIX 2: Symposium Programme

Tuesday 1 September

REGISTRATION

Opening Ceremony

Opening Address Barry Blake — *Natural Resources Management Department, NRI*
 Organisation of Meeting John Rogers — *Fisheries and Aquatic Resources Group, NRI*

SESSION 1 Finance for Fisheries Enterprises

Chair John Rogers — *Fisheries and Aquatic Resources Group, NRI*
 Rapporteur Ian Watson — *Natural Resources Management Department, NRI*
 Presentations Bent Larsen — *FAO EASTFISH, Denmark*
 Krishan George — *KHF Fisheries Project, Romania/NRI Associate*
 Gheorghe Stefan — *Steel '94, Romania*
 Nikolay Kissiov — *State Fisheries Inspectorate, Bulgaria*
 László Váradi — *Szarvasi Halas Fish Farm, Hungary*
 Alexandr Kachowski — *PISCICOLA Association, Republic of Moldova*
 Bent Larsen — *FAO EASTFISH, Denmark*

Presentation and Discussion of Sample Proposals

Leader Bent Larsen

WELCOME DRINKS

Wednesday 2 September

SESSION 2 Business Management Training

Chair Nick Willoughby — *Natural Resources Management Department, NRI*
 Rapporteur Ian Watson — *Natural Resources Management Department, NRI*
 Presentations John Rogers — *NRI*
 Chris Sealy — *MEAD/NRI Associate*
 Angela Coman & Cornel Mihai — *BROCAD, Romania*
 Algirdas Gedrimas — *Fisheries Department, Ministry of Agriculture, Lithuania*
 Chris Sealy — *MEAD/NRI Associate*

General Discussion on Business Management and Training

Leader Chris Sealy/John Rogers

SESSION 3 Quality Assurance and Hygiene in Relation to International Trade Compliance

Chair Ian Goulding — *Megapesca, Portugal*
 Rapporteur Linda Nicolaides — *Food Security Department, NRI*
 Presentations John Ryder — *FAO EASTFISH*
 Jolanta Hillar — *Sea Fisheries Institute, Poland*
 Carmen Moraru — *University of Galati, Romania*
 Christopher Leftwich — *Fishmongers' Company, UK*

SYMPOSIUM RECEPTION AND DINNER

Thursday 3 September

SESSION 4 Total Quality Management and HACCP

Chair Ian Watson

Rapporteur László Varadi

Presentations Linda Nicolaidis — *Food Security Department, NRI*
Mike Dillon — *Mike Dillon Associates Ltd., UK*
John Ryder — *FAO EASTFISH, Denmark*

SESSION 5 The Marketing of Fish and Fish Products

Chair László Varadi

Rapporteur Ian Watson

Presentations David Cleghorn — *Sea Fish Industry Authority, UK*
John Dallimore — *J.D. and Associates, Germany*
Malkhaz Khurtsilava — *State Department of Fisheries, Georgia*
Mykola Grynzhhevsky — *Institute for Fisheries, Ukraine*
Yordan Staykov — *Thracian University, Bulgaria*

Summary and Discussion

Leader John Ryder & John Rogers

SESSION 6 New and Added Value Product Development

Chair John Ryder

Rapporteur Ian Watson

Presentations John Rogers — *NRI*
Carmen Moraru — *University of Galati, Romania*

CLOSING SESSION

General Summary John Rogers

Closing Address Barry Blake

Friday 4 September

Post-Symposium Tour

Conducted tour of Billingsgate Market

BREAKFAST

APPENDIX 3: Address List for Participants and Main Authors

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